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ILLINOIS MINERALS NOTE 66

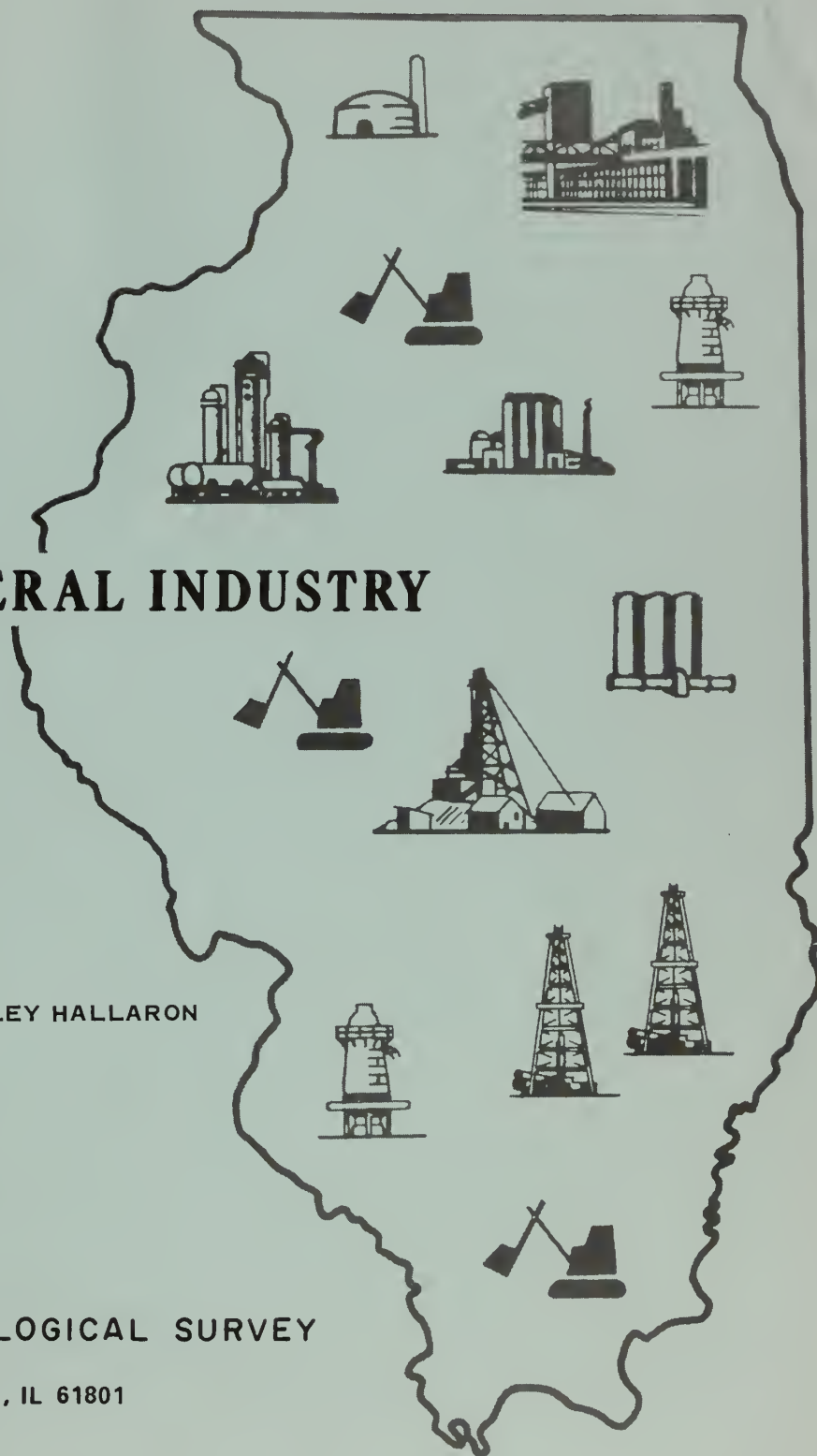
FEBRUARY 1977

ILLINOIS MINERAL INDUSTRY IN 1974

RAMESH MALHOTRA AND SHIRLEY HALLARON

ILLINOIS STATE GEOLOGICAL SURVEY

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ILLINOIS MINERAL INDUSTRY IN 1974

Ramesh Malhotra and Shirley Hallaron

ILLINOIS MINERAL INDUSTRY

The mineral industry of Illinois consists of three types of operation. One is the actual removal of the mineral materials from the ground by mining or other means of extraction. Another is the processing of crude mineral materials, most of them mined outside of Illinois, into basic industrial raw materials. The third is the manufacturing of mineral products, such as coke, cement, and lime, from mineral materials, most of which are extracted and processed in Illinois. Table 1 lists the commodities in all three categories and gives their production and values from 1972 through 1974.

In 1974 Illinois ranked 11th among the states in value of mineral production, according to figures from the U.S. Bureau of Mines. Table 2 shows Illinois mineral production figures for 1974, by mineral commodity, and the state's percentage of the total national output.

Mineral Materials Mined

The 1974 value of mineral commodities mined in Illinois was \$1,040 million, representing a 37 percent increase over the 1973 value (table 1). The mineral fuels—coal, crude oil, and natural gas—accounted for 79.4 percent of the 1974 total; industrial and construction materials—clays, fluorspar, sand and gravel, stone, and tripoli—added 20.1 percent; the metals—lead, zinc, and silver—along with other minerals such as peat, barite, and gemstones made up the remaining 0.5 percent.

In 1974 Illinois was the nation's foremost shipper of fluorspar and tripoli, was second in the production of peat and stone, and was the fourth largest sand and gravel and coal producer. Extraction of mineral materials was reported by 98 of the state's 102 counties (tables 3 and 4). Perry County had the highest production value of any Illinois County. Although it produced only coal and crude oil, its mineral production value of \$111.6 million was approximately 11 percent of the state total.

TABLE 1—PRODUCTION AND VALUE OF MINERAL MATERIALS MINED AND/OR PROCESSED AND MINERAL PRODUCTS MANUFACTURED

Commodity	Unit	1974			1973			1972		
		Quantity	Value (\$1000)	Average unit value (\$)	Quantity	Value (\$1000)	Average unit value (\$)	Quantity	Value (\$1000)	Average unit value (\$)
MINERAL MATERIALS MINED										
FUELS										
Coal	thousand tons	58,073	\$ 580,726	\$ 10.00	61,549	\$412,992	\$ 6.71	65,521	\$ 402,301	\$ 6.14
Crude oil	thousand bbl	27,553	244,395	7.52	30,669	132,490	4.32	34,874	121,013	3.47
Natural gas	million cu ft	1,436	574		1,638	573	0.35	1,194	334	0.28
Natural gas liquids*	million bbl	—	—	—	—	—	—	168	566	3.37
TOTAL			\$ 825,695			\$546,055			\$ 524,214	
INDUSTRIAL AND CONSTRUCTION MATERIALS										
Clays										
Common	thousand tons	1,484	3,071	2.07	1,660	3,003	1.81	1,610	2,652	1.65
Refractory	thousand tons	103	673	6.56	97	609	6.28	106	662	6.24
Absorbent	thousand tons	W	W	W	W	W	W	W	W	W
Fluorspar (shipments)	tons	153,698	12,247	79.68	165,813	12,278	74.05	132,405	9,961	75.23
Sand and gravel										
Sand, construction	thousand tons	16,929	24,238	1.43	19,508	24,234	1.24	17,023	19,109	1.12
Sand, industrial	thousand tons	2,084	8,738	4.19	4,976	21,537	3.92	5,173	19,218	3.71
Gravel, common	thousand tons	23,692	35,590	1.46	21,692	31,387	1.45	17,734	23,367	1.32
Stone (limestone and dolomite)										
Crushed and broken	thousand tons	63,229	121,693	1.92	66,650	114,007	1.71	56,260	94,225	1.67
Dimension	thousand tons	W	W	W	W	W	W	W	W	W
Tripoli	thousand tons	W	W	W	W	W	W	W	W	W
TOTAL			\$ 206,250			\$207,055			\$ 169,194	
METALS										
Lead	tons	493	222	450.30	541	176	325.32	1,335	401	300.55
Zinc	tons	4,104	2,947	718.08	5,250	2,169	413.14	11,378	4,039	355.00
Silver	tons	W	W	W	W	W	W	W	W	W
TOTAL			\$ 3,169			\$ 2,345			\$ 4,440	
OTHERS										
Peat	thousand tons	96	1,412	14.74	72	1,037	W	74	W	W
Gem stones	NA	W	NA	—	W	—	—	—	W	—
Barite	W	—	W	W	—	—	—	—	—	—
TOTAL			\$ 1,412			\$ 1,037			\$ W	
Values that cannot be disclosed (W)										
Total value of mineral materials mined†			3,529			2,792			3,393	
			\$1,040,055			\$759,284			\$ 701,242	
MINERAL MATERIALS PROCESSED										
Natural gas liquids†	thousand bbl	—	W	—	8,650	23,919	2.77	8,610	17,908	2.08
Ground mica	—	—	—	—	—	W	—	—	W	—
Expanded perlite	—	—	W	—	—	W	—	—	W	—
Barite, ground	—	—	W	—	—	W	—	—	W	—
Gypsum, calcined	—	—	W	—	—	W	—	—	W	—
Exfoliated vermiculite	—	—	W	—	—	W	—	—	W	—
Iron oxide pigments	—	—	W	—	—	W	—	—	W	—
Bismuth	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Primary slab zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Secondary slab zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Columbium	—	—	—	—	—	—	—	—	—	—
Pig iron	thousand tons	7,184	1,003,573	139.18	7,964	585,054	75.24	7,197	542,883	75.43
TOTAL			\$1,003,573			\$608,973			\$ 560,791	
Values that cannot be disclosed (W)										
Total value of mineral materials processed†			68,930			26,435			21,157	
			\$1,072,503			\$635,408			\$ 581,948	

(Concluded on next page)

Mineral Materials Processed

Processing of foreign raw mineral materials, most of them produced in other states, was done in 16 Illinois counties in 1974 (tables 3 and 4). Pig iron, natural gas liquids, ground mica, expanded perlite, ground barite, calcined gypsum, exfoliated vermiculite, iron oxide pigments, sulfur, and both primary and secondary slab zinc were processed and had a total value of \$1072.5 million. Of that total, 93.6 percent was contributed by pig iron produced in Cook and Madison Counties. In addition, elemental sulfur was recovered; its value is included with lime to avoid disclosing confidential data from individual companies.

The state's production of expanded perlite and iron oxide pigments was the highest in the United States. Illinois ranked sixth in the quantity and fourth in the value of elemental sulfur recovered.

Mineral Products Manufactured

The manufacture of mineral products in Illinois in 1974, mainly from materials mined within the state, included cement, coke, lime, clay products, and glass. Their combined value was \$254.8 million in 1974, an increase from the \$200.7 million reported in 1973. Coke accounted for 49.3 percent of the total value, clay products for 22.3 percent. No figures were available for the value of glass manufactured in Illinois.

TABLE 1—*Concluded*

Commodity	Unit	1974			1973			1972		
		Quantity	Value (\$1000)	Average unit value (\$)	Quantity	Value (\$1000)	Average unit value (\$)	Quantity	Value (\$1000)	Average unit value (\$)
MINERAL PRODUCTS MANUFACTURED										
Cement (shipments)										
Portland	thousand tons	1,460	\$ 41,023	\$28.10	1,572	\$ 36,064	\$ 22.94	1,571	\$ 33,124	\$21.08
Masonry	tons	69	3,228	46.68	88	2,901	32.97	80	2,483	31.18
Clay products, estimated		—	56,898	—	—	56,453	—	—	69,248	—
Lime	tons	W	W	W	W	W	17.78	W	W	W
Sulfur†	tons	W	W	W	W	W	W	W	W	W
Coke	thousand tons	1,912	125,694	65.74	1,941	83,308	42.92	2,085	82,816	39.72
Glass		NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL			\$ 226,843			\$178,726			\$187,671	
Values that cannot be disclosed (W)			27,956			21,974			18,025	
Total value of mineral products manufactured			\$ 254,799			\$200,700			\$205,696	
STATE TOTAL†			\$2,367,357			\$1,595,392			\$1,488,886	

* Produced in Illinois, according to the American Petroleum Institute.

† Data may not add to totals shown because figures have been rounded.

‡ Processed in Illinois.

§ Values and amounts of sulfur processed are included with total of mineral products manufactured to avoid disclosing individual companies confidential data on lime.

W - Withheld to avoid disclosing confidential data.

NA - Not available.

Employment and Wages

Illinois Department of Labor data indicate that the Illinois mineral industry provided employment for 162,500 persons in 1974. This included 23,700 persons in mining, quarrying, and oil and gas extraction; 84,600 in mineral processing; and 54,200 in manufacturing mineral products (table 5).

TABLE 2—ILLINOIS MINERAL PRODUCTION, ITS VALUE, AND ITS PERCENTAGE OF UNITED STATES MINERAL PRODUCTION, 1974

Commodity	Unit	Illinois		United States		Illinois percentage of United States Production	
		Quantity	Value (\$1000)	Quantity	Value (\$1000)	Quantity	Value
Fluorspar shipments	thousand tons	154	12,247	194*	13,800	79.38	88.75
Peat, commercial sales	thousand tons	96	1,412	706	10,989	13.60	12.85
Coal	thousand tons	58,073	580,726	590,000*	8,850,000	9.84	6.56
Pig iron	thousand tons	7,184	1,003,573	95,000*	NA	7.56	—
Stone	thousand tons	63,229	121,763	981,000*	1,988,000*	6.45	6.12
Sand and gravel	thousand tons	42,705	68,566	978,754	1,451,071	4.36	4.73
Coke	thousand tons	1,912	123,515	61,581	4,609,203	3.10	2.68
Clays†	thousand tons	1,587	3,744	61,087	422,874	2.60	0.89
Zinc	thousand tons	4	2,947	492	396,552	0.81	0.74
Cement shipments	thousand tons	1,669	44,251	82,914	2,220,936	2.01	1.99
Crude oil	thousand bbl	27,553	244,395	3,202,585	21,580,549	0.86	1.13
Lead	thousand tons	0.5	222	677	304,000*	0.07	0.07
Natural gas liquids produced	thousand bbl	NA	NA	620,000	3,602,200	—	—
Natural gas	million cu ft	1,436	574	21,600,522	66,573,402	†	†
Lime	thousand tons	W	W	21,646‡	476,600‡	—	—

* Estimated.

† Excluding fuller's earth.

‡ Less than one one-hundredth.

§ Preliminary data.

NA - Not available.

W - Withheld to avoid disclosing confidential data from individual companies.

Source: U.S. Bureau of Mines, Illinois State Geological Survey, Illinois Department of Mines and Minerals, and American Petroleum Institute.

TABLE 3—VALUE OF MINERAL MATERIALS MINED AND/OR PROCESSED AND
MINERAL PRODUCTS MANUFACTURED IN ILLINOIS, 1974, BY COUNTY

County	Mineral materials mined, in order of value	Value (\$1000)	Mineral materials processed, in order of value	Value (\$1000)	Mineral products manufactured, in order of value	Value (\$1000)	Total value (\$1000)
Adams	Stone; sand and gravel; crude oil	2,995	Iron oxide pigments	W	Lime	W	W
Alexander	Tripoli; sand and gravel	W	—	—	—	—	W
Bond	Crude oil; sand and gravel; clay	735	—	—	—	—	735
Boone	Stone; sand and gravel	598	—	—	—	—	598
Brown	Stone; crude oil; clay; sand and gravel	W	—	—	Clay products	W	W
Bureau	Sand and gravel	904	—	—	Clay products	W	W
Calhoun	Stone	W	—	—	—	—	W
Carroll	Stone	422	—	—	—	—	422
Cass	—	—	—	—	—	—	—
Champaign	Sand and gravel	993	—	—	—	—	993
Christian	Coal; crude oil; stone	W	—	—	—	—	W
Clark	Stone; crude oil*; sand and gravel	W	—	—	—	—	W
Clay	Crude oil; stone	W	—	—	—	—	W
Clinton	Crude oil; stone; sand and gravel	W	—	—	—	—	W
Coles	Crude oil; stone; sand and gravel; natural gas	W	—	—	—	—	—
Cook	Stone; sand and gravel; clay; peat*	30,256	Pig iron*; expanded perlite; ground mica; secondary slab zinc; bismuth; exfoliated vermiculite	2,846	Coke; lime; clay	30,061	63,163
Crawford	Crude oil; sand and gravel	9,968	Sulfur†	W	Clay products	W	W
Cumberland	Crude oil*; sand and gravel; stone	5,428	—	—	—	—	5,428
De Kalb	Stone; sand and gravel	W	Exfoliated vermiculite; ex- panded perlite	W	—	—	1,552
De Witt	Crude oil; sand and gravel	W	—	—	—	—	W
Douglas	Coal; stone; crude oil	W	Natural gas liquids*	—	—	—	W
Du Page	Sand and gravel; stone	W	Exfoliated vermiculite	W	Clay products; glass	W	7,438
Edgar	Crude oil	896	—	—	—	—	896
Edwards	Crude oil	3,521	—	—	—	—	3,521
Effingham	Crude oil	2,031	—	—	—	—	2,031
Fayette	Crude oil; stone; sand and gravel; clay	25,816	Sulfur†	—	Clay products	W	W
Ford	Sand and gravel; stone	632	—	—	—	—	632
Franklin	Coal; crude oil; stone	58,247	—	—	—	—	58,247
Fulton	Coal; sand and gravel	25,449	—	—	—	—	25,449
Gallatin	Coal; crude oil†; sand and gravel; natural gas	W	—	—	—	—	W
Greene	Stone	W	—	—	—	—	W
Grundy	Sand and gravel; clay; stone	W	—	—	Clay products	W	5,894
Hamilton	Crude oil	7,202	—	—	—	—	7,202
Hancock	Stone	1,003	—	—	—	—	1,003
Hardin	Fluorspar; stone; zinc; lead; primary barite; silver; germanium†	19,193	—	—	—	—	19,193
Henderson	Stone	W	—	—	—	—	W
Henry	Stone	W	—	—	—	—	W
Iroquois	Stone; sand and gravel	W	—	—	—	—	W
Jackson	Stone; coal; sand and gravel	W	—	—	—	—	W
Jasper	Crude oil; sand and gravel	5,669	—	—	—	—	5,669
Jefferson	Coal; crude oil	73,366	—	—	—	—	73,366
Jersey	Stone	218	—	—	—	—	218
Jo Daviess	Sand and gravel; stone	W	—	—	—	—	W
Johnson	Stone; coal	W	—	—	—	—	W
Kane	Sand and gravel; stone#; peat*	11,596	Iron oxide pigments	W	Clay products	W	W

(Continued on next page)

TABLE 3—Continued

County	Mineral materials mined, in order of value	Value (\$1000)	Mineral materials processed, in order of value	Value (\$1000)	Mineral products manufactured, in order of value	Value (\$1000)	Total value (\$1000)
Kankakee	Stone; clay; sand and gravel	W	Sulfur†	—	—	W	3,879
Kendall	Stone; sand and gravel	W	—	—	—	—	W
Knox	Coal; stone; clay	W	—	—	Clay products	W	18,192
Lake	Sand and gravel; peat*	1,294	Caloined gypsum; expanded perlite; oolumbium†	W	Clay products; glass†; fiber glass†	W	6,842
La Salle	Sand and gravel; stone; clay	15,405	—	—	Cement; clay products; glass†	21,104	36,509
Lawrence	Crude oil; sand and gravel	31,848	Sulfur†	—	—	W	W
Lee	Stone; sand and gravel	W	—	—	Cement	W	W
Livingston	Stone; clay; sand and gravel	W	—	—	Clay products	W	6,766
Logan	Sand and gravel; stone	W	—	—	Glass†	W	W
McDonough	Stone; crude oil; clay	W	—	—	Clay products	W	W
McHenry	Sand and gravel	8,832	—	—	—	—	8,832
McLean	Sand and gravel	205	—	—	Fiber glass†	W	205
Macon	Sand and gravel; crude oil	1,118	—	—	Glass†	W	1,118
Macoupin	Coal; stone; crude oil	W	Exfoliated vermiculite	W	—	—	W
Madison	Stone; crude oil; sand and gravel	4,111	Pig iron*; sulfur†	W	Coke*; clay products; glass†	W	7,138
Marion	Crude oil; stone	W	Secondary slab zinc†	NA	Glass†	W	W
Marshall	Sand and gravel	65	—	—	—	—	65
Mason	Sand and gravel	35	—	—	—	—	35
Massac	Sand and gravel	W	—	—	Cement	W	W
Menard	Stone	W	—	—	—	—	W
Mercer	Stone; sand and gravel	W	—	—	—	—	W
Monroe	Stone	W	—	—	—	—	W
Montgomery	Coal; stone; crude oil	21,683	—	—	Glass†	W	21,683
Morgan	—	—	—	—	—	—	—
Moultrie	Crude oil; sand and gravel	W	—	—	—	—	—
Ogle	Stone; sand and gravel	W	—	—	—	—	W
Peoria	Coal; sand and gravel; stone	13,509	—	—	—	—	13,509
Perry	Coal; crude oil	111,617	—	—	—	—	111,617
Piatt	—	—	—	—	—	—	—
Pike	Stone; sand and gravel	928	—	—	—	—	928
Pope	Fluorspar*	—	—	—	—	—	—
Pulaski	Clay; stone; sand and gravel	W	—	—	—	—	W
Putnam	—	—	—	—	—	—	—
Randolph	Coal; stone; crude oil; sand and gravel	W	—	—	—	—	W
Richland	Crude oil	9,429	—	—	—	—	9,429
Rock Island	Stone; sand and gravel	W	—	—	—	—	W
St. Clair	Coal; stone; crude oil	69,671	Iron oxide pigments; primary slab zinc†; ground barite	W	Glass†	W	W
Saline	Coal; crude oil; natural gas	26,168	—	—	—	—	26,168
Sangamon	Coal; sand and gravel; crude oil; stone	25,914	—	—	—	—	25,914
Schuyler	Sand and gravel	W	—	—	—	—	W
Scott	Stone; clay; sand and gravel	W	—	—	Clay products	W	W
Shelby	Sand and gravel; crude oil; stone	4,480	—	—	—	—	4,480
Stark	Coal; sand and gravel	W	—	—	—	—	W
Stephenson	Stone; sand and gravel	678	—	—	—	—	678
Tazewell	Sand and gravel; clay	W	—	—	—	—	W
Union	Stone; sand and gravel	W	—	—	—	—	W
Vermillion	Stone; sand and gravel; coal	W	—	—	—	—	W

(Concluded on next page)

TABLE 3—Concluded

County	Mineral materials mined, in order of value	Value (\$1000)	Mineral materials processed, in order of value	Value (\$1000)	Mineral products manufactured, in order of value	Value (\$1000)	Total value (\$1000)
Wabash	Crude oil; coal; sand and gravel	16,533	—	—	—	—	16,533
Warren	Stone	W	—	—	Clay products	W	3,134
Washington	Crude oil; stone	W	—	—	—	—	W
Wayne	Crude oil	25,732	—	—	—	—	25,732
White	Crude oil; sand and gravel	28,401	—	—	—	—	28,401
Whiteside	Stone; sand and gravel; peat*	W	—	—	—	—	W
Will	Stone; sand and gravel; coal	15,008	Expanded perlite; sulfur†	W	Glass‡	W	W
Williamson	Coal; crude oil; natural gas	33,939	—	—	—	—	33,939
Winnebago	Stone; sand and gravel	2,989	—	—	—	—	2,989
Woodford	Sand and gravel	1,905	—	—	—	—	1,905
	Values that cannot be disclosed#	272,141	—	***	—	77,940	488,873
Undistrib-uted	Peat*; stone; sand and gravel; crude oil; gem stone	9,279	Pig iron*; natural gas liquid	1,069,657	Coke*	125,694	1,178,214
Total		1,040,055		1,072,503		254,799	2,367,357

* Peat, pig iron, and coke values not available by county.

† Sulfur values included with mineral products manufactured to avoid disclosing individual companies' confidential data on lime (table 1).

‡ Value unknown; not included in total.

§ Fluorspar and metals values included with Hardin County.

Includes values indicated by symbol W and dimension stone from Kane County.

** Crude oil value included with Cumberland County.

†† Portion of Gallatin's crude oil value included with Saline County.

*** Values which cannot be disclosed and undistributed added together to conceal individual figures.

W - Withheld to avoid disclosing confidential data from individual companies; included with "Undistributed."

Source: U.S. Bureau of Mines, Illinois Department of Mines and Minerals, and Illinois State Geological Survey.

TABLE 4—MINERAL MATERIALS PRODUCED IN ILLINOIS, BY COMMODITY, 1974

Commodity	Type of production*	Number of producing counties	County rank, by quantity produced†	Commodity	Type of production*	Number of producing counties	County rank, by quantity produced†
Barite, ground and primary	P, M	1	St. Clair, Pope, Hardin	Lime	Mf	2	Cook, Adams
Bismuth	P	1	Cook	Mica, ground	P	1	Cook
Cement	Mf	3	La Salle, Lee, Massac	Natural gas	M	4	Coles, Saline, Williamson, Gallatin
Clays	M	13	La Salle, Cook, Livingston, Pulaski, Bond, Grundy, Kankakee, Scott, Knox, Tazewell	Natural gas liquids	P	1	NA
Clay products	Mf	21	QNA‡	Peat	M	4	Lake, Whiteside, Kane, Cook*
Coal	M	22	Perry, Jefferson, St. Clair, Franklin, Randolph, Williamson, Fulton, Macoupin, Saline, Sangamon	Perlite, expanded	P	4	Will, Cook, Lake, De Kalb
Coke	Mf	2	Cook, Madison	Pig iron	F	2	Cook, Madison§
Columbium	P	1	Lake	Sand and gravel, common	M	64	Kane, McHenry, Grundy, Will, Du Page, Cook, Rock Island, Tazewell, Kendall, Sangamon
Crude oil	M	40	Lawrence, White, Marion, Wayne, Fayette, Clay, Crawford, Richland, Weebaw, Hamilton	Silver	M	1	Hardin, Pope
Fluorspar	M	2	Hardin, Pope	Stone, crushed and broken	M	63	Cook, Will, St. Clair, Livingston, Hardin, La Salle, Kankakee, Lee, Vermillion, Rock Island
Gem stones	M	NA	NA				
Germanium	M	2	Hardin, Pope	Stone, dimension	M	1	Kane
Glass	Mf	9	QNA‡	Sulfur	P	6	Will, Madison, Crawford, Lawrence, Kankakee, Fayette
Gypsum, calcined	P	1	Lake	Tripoli	M	1	Alexander
Iron oxide pigments	P	3	St. Clair, Adams, Kane	Vermiculite, exfoliated	P	3	Du Page, De Kalb, Cook, Macoupin
Lead	M	1	Hardin, Pope	Zinc, primary	P, M	1	Hardin, Pope
				Zinc, secondary slab	P	2	Marion, Cook§

* M - mined, P - processed, Mf - manufactured.

† For commodities produced in more than 10 counties, only the first 10 counties are listed.

‡ Quantity not applicable.

§ County rank estimated.

NA - Not available

Source: U.S. Bureau of Mines, Illinois Department of Mines and Minerals, and Illinois State Geological Survey.

TABLE 5—NUMBER OF EMPLOYEES AND AVERAGE WEEKLY EARNINGS, HOURS WORKED, AND HOURLY WAGES IN ILLINOIS MINERAL INDUSTRY, 1973 AND 1974

Class of employment	1974				1973			
	Number of employees (x 1000)	Average weekly earnings (\$)	Average number of hours worked per week	Average hourly earnings (\$)	Number of employees (x 1000)	Average weekly earnings (\$)	Average number of hours worked per week	Average hourly earnings (\$)
Mining	23.7	265.24	42.4	6.25	22.9	241.57	43.6	5.54
Bituminous coal	11.9	289.59	41.5	6.98	11.5	260.81	42.7	6.10
Oil and gas extraction	5.4	211.87	42.1	5.04	4.9	185.92	40.8	4.55
Other	6.4	229.19	44.7	5.13	6.5	255.33	46.2	4.87
Mineral processing								
Blast furnaces and basic steel	51.4	257.78	41.3	6.24	51.2	231.48	42.2	5.48
Primary metal industries	20.6	221.66	42.3	5.24	20.6	213.69	43.9	4.87
Petroleum refining	12.6	265.76	42.6	6.24	12.2	237.37	41.9	5.67
Mineral product manufacturing								
Glass and glass products	13.4	208.90	40.7	5.13	13.8	202.69	41.8	4.84
Cement and clay products	4.6	170.16	38.6	4.41	5.0	158.82	39.1	4.07
Stone and other mineral products	19.0	216.30	42.7	5.06	18.4	197.81	43.0	4.60
Petroleum and coal products	17.2	251.37	43.0	5.85	4.6	204.40	44.7	4.58

Source: Illinois Department of Labor, Bureau of Employment Security.

Average weekly earnings of workers in the mining sector of the Illinois mineral industry were \$265.24, an increase of 9.8 percent from the 1973 average earnings. While average earnings increased, the average number of hours worked per week decreased from 43.6 to 42.4. Average weekly earnings of bituminous coal miners, \$289.59, were the highest in the mineral industries. Table 5 gives more detailed statistical data on employment in the mineral industry in Illinois for 1973 and 1974.

Transportation of Minerals and Mineral Products

The shipment of mineral materials is a considerable part of the Illinois transportation industry. In 1974 more than 100 million tons of mineral materials was shipped by truck, and more than 52 million tons went by railroad. Crushed stone contributed more than 50 percent of the total tonnage shipped by truck, and sand and gravel more than 30 percent. More than 90 percent of the railroad tonnage consisted of coal. Railroad, truck, and barge were used to ship other materials, such as pig iron, coke, and clay products. Pipelines were the major carriers of crude oil and natural gas.

Consumption of Minerals and Energy in Illinois

Illinois is a leading manufacturing state, and it therefore consumes a large variety of mineral materials each year. Data for some of the mineral materials used in Illinois during 1973 and 1974 are shown in table 6.

On the average, Illinois consumption of most mineral commodities is about 6 percent of the total consumed in the nation. According to the U.S. Census Bureau, 5.3 percent of the nation's total population resides in Illinois. Mineral consumption in the state, therefore, is approximately proportionate to its population.

TABLE 6—SELECTED MINERAL MATERIALS USED IN ILLINOIS, 1973 AND 1974

Commodity	Quantity unit	1973			1974		
		United States	Illinois	Illinois percentage of U.S. consumption	United States	Illinois	Illinois percentage of U.S. consumption
FUELS							
Coal	million tons	589.8	40.6	6.88	552.7	39.0	7.06
Coke	million tons	64.5	3.8	5.89	61.6	3.1	5.03
Distillate fuel oil	million bbl	1,135.1 ^R	54.3 ^R	4.78 ^R	1,078.0	54.1	5.02
Gasoline	million bbl	2,448.0	120.6	4.93	NA	119.6	—
Kerosine	million bbl	78.7	4.5	5.72	64.4	3.3	5.12
Liquified petroleum gases	million bbl	527.3	15.7	2.98	NA	17.5	—
Natural gas	trillion cu ft	23.0	1.2	5.22	22.1	1.2	5.43
Residual fuel oil	million bbl	1,019.9	29.2	2.86	NA	28.5	—
METALS							
Pig iron	million tons	99.8 ^R	7.9	7.92 ^R	96.8	7.3	7.54
Lead	thousand tons	1,541.2	NA	NA	1,599.0	NA	—
Zinc (slab)	thousand tons	1,520.0*	NA	NA	1,350.0*	NA	—
CONSTRUCTION MATERIALS							
Air-cooled slag	million tons	23.7	1.19*	5.02	NA	NA	—
Asphalt	million tons	34.1 ^R	2.1 ^R	6.16	31.8	1.8	5.66
Cement (portland)	million tons	89.7	4.1	4.57	79.5	3.6	4.53
Road oil	million tons	1.4	0.2	14.29	1.3	0.2	15.38
Sand and gravel	million tons	983.6	43.6	4.43	967.5	42.7	4.41
Stone	million tons	1,060.1	66.7	6.29	981.0	63.2	6.44
AGRICULTURAL AND CHEMICAL MATERIALS							
Feldspar	thousand tons	791.9	W	W	730.0*	NA	—
Fluorspar	thousand tons	1,351.7	86.7	6.41	1,525.0	75.1	4.92
Lime†	thousand tons	21,132.0	1,202.3	5.69	22,298.0	W	—
Salt							
Evaporated	thousand tons	5,905.0	365.0	6.18	5,893.0	355.0	6.02
Rock	thousand tons	12,024.0	1,046.0	8.70	14,599.0	1,073.0	7.35

* Estimated

† Excludes regenerated lime.

R - Revised.

NA - Not available.

W - Withheld to avoid disclosing confidential data from individual companies.

Source: U.S. Bureau of Mines.

Illinois consumed an estimated 3,479.2 trillion Btu of energy in 1974, or 4.76 percent of the total energy consumed in the United States (table 7). A large part of the energy used came from mineral fuels. In 1973, Illinois energy consumption was estimated at 3,537.5 trillion Btu, or 4.88 percent of the total energy consumed in the United States.

Trends in gross energy used in Illinois are shown in figure 1. In spite of an increase in total energy consumption in Illinois from 2,215 trillion Btu in 1957 to 3,479 trillion Btu in 1974, the role of coal as a source of energy has declined while that of natural gas and oil products has grown. The use of nuclear power also is growing rapidly and partly replacing coal in the Illinois energy market.

INDIVIDUAL COMMODITIES

Mineral Materials Mined

The minerals mined in Illinois are categorized into four groups, each of which is discussed on the following pages with relevant statistical

data. The groups are fuels, industrial and construction materials, metals, and other materials.

Fuels

Coal

Production—Illinois maintained its rank as fourth among the nation's leading coal-producing states as it produced a total of 58.1 million tons valued at \$580.7 million. In spite of a 5.6 percent decrease in production from 1973, total value in 1974 increased 40.6 percent owing to the increase in f.o.b. mine value of coal from \$6.71 to \$10.00 per ton. The decline in Illinois mine production in 1974 can be attributed largely to the nationwide labor strike that closed all union mines in the state during the month of November and part of December.

Coal was mined in 22 counties in 1974; strip mines operated in 14 counties (table 8). The 10 leading counties—Perry, Jefferson, St. Clair, Franklin, Randolph, Williamson, Fulton, Macoupin, Saline, and Sangamon—together contributed 82 percent of the total production (fig. 2).

Only four counties—Perry, Randolph, St. Clair, and Fulton—reported more than 2 million tons of coal

TABLE 7—FUELS AND ENERGY CONSUMED
IN ILLINOIS, 1973 AND 1974

Fuel	Units	1974	1973	Change from 1973 to 1974 (%)	Trillion Btu	
					1974	1973
Coal	thousand tons	39,054	40,628	- 3.87	859.2	893.8
Natural gas	million cu ft	1,163,215	1,163,800	- 0.05	1,199.3	1,199.9
Gasoline	thousand bbl	119,637	120,558	- 0.76	627.8	632.7
Kerosine	thousand bbl	3,274	4,485	-27.00	18.6	25.4
Distillate fuel oil	thousand bbl	54,050	53,865	+ 0.34	314.8	313.8
Residual fuel oil	thousand bbl	28,532	29,195	- 2.27	179.4	183.5
Liquid petroleum gases	thousand bbl	17,487	15,727	+11.19	70.1	63.1
Hydropower	thousand kilo- watt hr	106,482 ^P	98,343 [*]	+ 8.28	1.1	1.0
Nuclear power	million kilo- watt hr	19,592 ^P	21,041	- 6.89	208.9	224.3
Total					3,479.2	3,537.5
Illinois percentage of total United States energy consumption					4.76	4.88
Percentage of total energy consumed in Illinois, by source:						
Coal					24.70	25.27
Natural gas					34.47	33.92
Oil products					34.80	34.44
Nuclear power					6.00	6.34
Hydropower					0.03	0.03
					100.00	100.00

* Estimated; based on 6-month average.

P - Preliminary.

Fuel conversion factors:

Coal - 22,000,000 Btu/ton (@ 11,000 Btu/lb)
Natural gas - 1,031 Btu/Mcf
LPO - 4,011,000 Btu/bbl
Gasoline - 5,248,000 Btu/bbl
Kerosine - 5,670,000 Btu/bbl
Distillate fuel oil - 5,825,000 Btu/bbl
Residual fuel oil - 6,287,000 Btu/bbl
Nuclear power - 10,660 Btu/net kWh
Hydropower - 10,478 Btu/kwh

Source: U.S. Bureau of Mines, American Petroleum Institute, and Federal Power Commission.

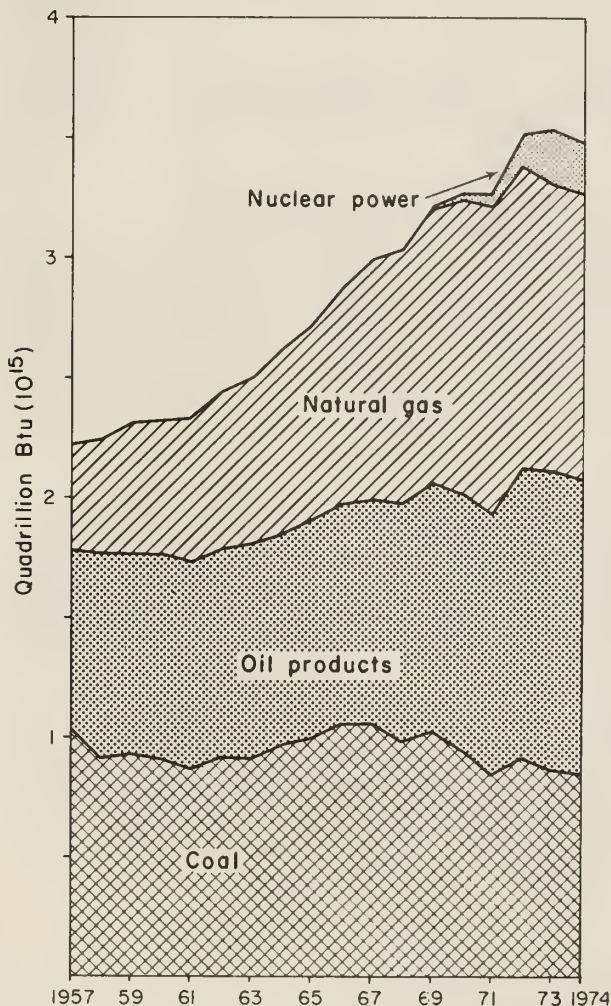


Fig. 1 - Gross energy used in Illinois from 1957 through 1974, by type of fuel or energy source. Hydropower's contribution is too small to show. The use of nuclear power began in 1969, but its contribution prior to 1969 was too small to show.

TABLE 8—ILLINOIS COAL PRODUCTION BY COUNTY, 1974

County	Number of mines	1974 Production* (tons)			Value†
		Underground (tons)	Strip (tons)	Total (tons)	
Christian	1†	1,594,476	—	1,594,476	15,944,760
Douglas	2	2,009,999	—	2,009,999	20,099,990
Franklin	3	5,369,480	—	5,369,480	53,694,800
Fulton	4	—	2,503,417	2,503,417	25,034,170
Gallatin	3	1,447,624	274,486	1,722,110	17,221,100
Grundy	—	—	—	—	—
Jackson	1	—	66,324	66,324	663,240
Jefferson	4	6,066,759	595,779	6,662,538	66,625,380
Johnson	1	—	4,857	4,857	48,570
Kankakee	—	—	—	—	—
Knox	1	—	1,017,046	1,017,046	10,170,460
Macoupin	1	2,479,763	—	2,479,763	24,797,630
Mercer	—	—	—	—	—
Montgomery	1	1,938,663	—	1,938,663	19,386,630
Peoria	3	—	1,148,292	1,148,292	11,482,920
Perry	5**	—	11,147,544	11,147,544	111,475,440
Randolph	4***	2,456,282	2,449,337	4,905,619	49,056,190
St. Clair	2#	1,874,300	4,599,887	6,474,187	64,741,870
Saline	6‡	1,238,276	1,191,801	2,430,077	24,300,770
Sangamon	†	2,239,251	—	2,239,251	22,392,510
Stark	1	—	253,364	253,364	2,533,640
Vermilion	1	5,470	—	5,470	54,700
Wabash	1	743,536	—	743,536	7,435,360
Will	1††	—	140,222	140,222	1,402,220
Williamson	9‡	1,640,233	1,576,172	3,216,405	32,164,050
Total	55	31,104,112	26,968,528	58,072,640	580,726,400
Total (%)		53.6	46.4		

* Production figures, Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1973-1974.

† Value calculated at an average of \$6.71 per ton for 1973 and \$10.00 for 1974.

‡ One mine operated at junction of Christian, Montgomery, and Sangamon Counties.

** One mine operated at junction of Randolph and Perry Counties.

Two mines operated at junction of Randolph and St. Clair Counties.

‡ One mine operated at junction of Williamson and Saline Counties.

†† One mine operated at junction of Grundy and Will Counties.

mined by the strip method. Underground mining was carried out in 14 counties, six of which reported more than 2 million tons mined by this method (Jefferson, Franklin, Macoupin, Randolph, Sangamon, and Douglas). Perry, the state's leading coal-mining county, reported all 100 percent of its production mined by the strip method.

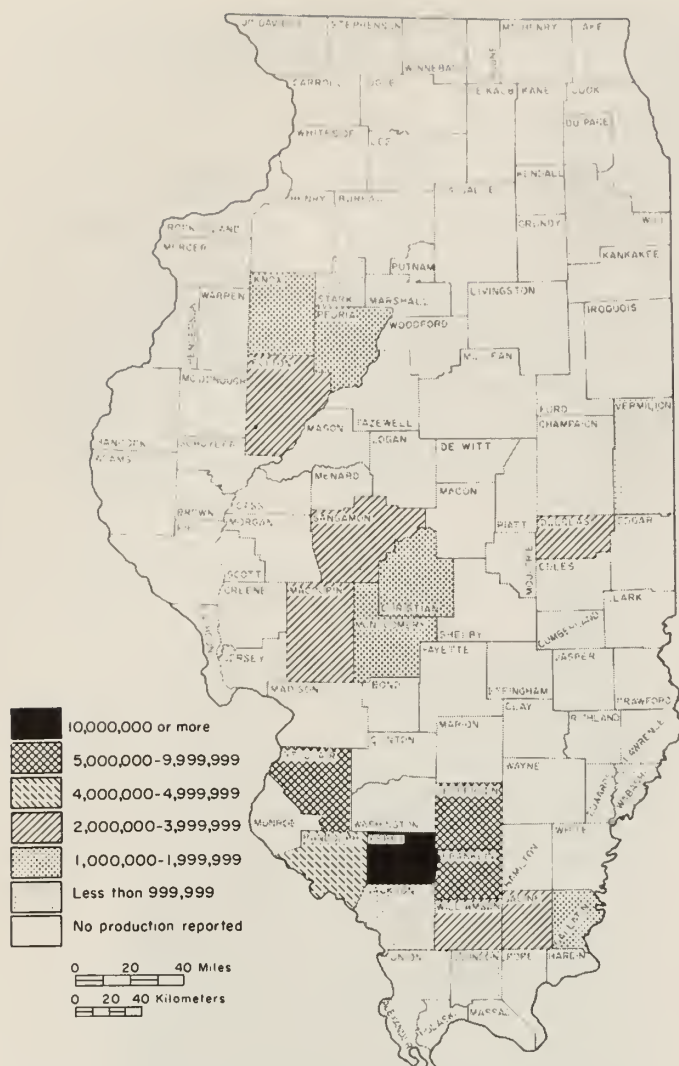


Fig. 2 - Illinois coal production by county, 1974.

growing concern for reclamation of mined land and the depletion of shallow, easily minable coal deposits.

The average production and average number of employees for both underground and strip mining are shown in table 10. Average output per underground mine in 1974 remained essentially the same as in 1973, about 1.4 million tons. The average output per strip mine declined from 905,353 tons in 1973 to 842,767 tons in 1974. The average number of employees at both strip and underground mining operations, however, increased in 1974. While the average output per strip mine in Illinois has been fluctuating from year to year, the average output per underground mine has been steadily increasing (table 10). A part of this increase in average output per underground mine is attributable to the closing down of small underground mining operations.

During 1974, 24 coal mining companies were operating in Illinois. The production of each company is shown in table 11.

A total of 4,499 million tons of coal has been produced from Illinois coal mines since 1833 (table 9). Of this amount, nearly 20 percent is estimated to have been extracted by strip mining and 80 percent by underground mining. Extensive strip mining did not begin in Illinois until the late 1920s.

The number of coal mines operating in Illinois has been declining annually since the early 1950s, when there were more than 150 mines. In 1974, 55 mines, 23 underground and 32 strip mines, were in operation in Illinois. The 31.1 million tons produced from the 23 underground mines was 53.6 percent of the total Illinois coal production (table 8). Since 1966 the amount of coal produced in Illinois by underground mining has been gradually increasing, whereas production by strip mining has been declining (fig. 3). In 1974 production from the 32 strip mines totaled 27.0 million tons—6.9 percent less than the amount produced in 1973. In 1967, the peak year for strip mining in Illinois, 44 strip mines reported operation and produced 37.1 million tons of coal. The principal factors responsible for this steady decline in strip mine production in Illinois are the

TABLE 9—CUMULATIVE COAL PRODUCTION IN ILLINOIS BY COUNTY, 1833-1974

County	Cumulative production* (tons)	Years active	Last year active	County	Cumulative production* (tons)	Years Active	Last year active
Adams	341,924	26	1969	Marshall	12,516,141	70	1951
Bond	7,355,569	57	1942	Menard	13,462,005	84	1965
Brown	65,347	40	1963	Mercer	15,519,862	86	1973
Bureau	53,823,055	80	1964	Monroe	8,284	13	1941
Calhoun	96,247	27	1912	Montgomery	131,706,926	93	1974
Cass	212,477	53	1941	Morgan	190,787	64	1951
Christian	296,478,753	90	1974	Moultrie	2,032,236	16	1924
Clark	4,482	2	1955	Peoria	91,434,331	93	1974
Clay	801	1	1963	Perry	285,839,365	93	1974
Clinton	38,656,325	79	1960	Pike	5,081	8	1942
Coles	198,932	6	1888	Pope	23,747	14	1972
Crawford	45,400	16	1961	Putnam	10,071,893	29	1938
Douglas	16,526,114	29	1974	Randolph	126,025,286	93	1974
Edgar	915,698	41	1952	Richland	154	1	1890
Effingham	796	1	1890	Rock Island	3,846,169	67	1948
Franklin	586,370,529	76	1974	St. Clair	334,572,269	93	1974
Fulton	288,724,631	93	1974	Saline	243,374,079	93	1974
Gallatin	21,256,136	90	1974	Sangamon	241,819,703	87	1974
Greene	693,191	84	1967	Schuyler	7,747,601	84	1966
Grundy	44,494,989	91	1973	Scott	612,476	61	1942
Hamilton	22,097	16	1905	Shelby	4,119,763	67	1950
Hancock	771,281	72	1958	Stark	8,893,800	84	1974
Hardin	40	1	1890	Tazewell	17,633,802	75	1956
Henry	22,910,053	84	1965	Vermilion	164,956,973	93	1974
Jackson	97,582,426	93	1974	Wabash	980,075	38	1974
Jasper	23,739	11	1939	Warren	685,466	73	1954
Jefferson	89,947,031	71	1974	Washington	18,165,386	88	1969
Jersey	120,350	59	1951	White	1,676,741	36	1940
Johnson	301,708	59	1974	Will	44,265,271	93	1974
Kankakee	8,858,008	45	1969	Williamson	411,608,937	93	1974
Knox	60,052,483	91	1974	Woodford	7,810,160	70	1951
La Salle	65,547,638	79	1960				
Livingston	10,111,437	80	1961	Total cumulative production, 1882-1974	4,425,935,676		
Logan	14,533,376	84	1968				
Macon	11,000,468	65	1947	Estimated production, all counties, 1833-1881	73,386,123		
Macoupin	274,564,750	92	1974				
McDonough	2,634,903	69	1951	Total cumulative production, 1833-1974	4,499,321,799		
McLean	5,544,139	47	1928				
Madison	164,295,772	83	1964				
Marion	39,247,722	82	1963				

* Production figures: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1974.

Employment and Wages—According to the Illinois Department of Mines and Minerals, 12,467 men were working in the coal mines in Illinois in 1974; 8,718 were in underground mining operations and 3,749 in strip mine operations. In 1973, 11,909 men were employed—7,749 in underground operations and 3,615 in strip operations.

The Illinois Department of Labor reported that the average hourly earnings for bituminous coal miners increased from \$6.10 in 1973 to \$6.98 in

1974, but the number of hours worked per week dropped 1.2 hours to 41.5 (table 5). In 1973 average hours worked per week were 42.7.

Mine Productivity—Average productivity of underground mines in Illinois, which had started to decline in 1970 when the Federal Health and Safety Act of December 1969 went into effect, declined in 1974 to a recent low of 15.76 tons per man-day, according to U.S. Bureau of Mines data. This is about 31.0 percent below the 1969 level. The recent decline, in 1974, can be attributed partly to the change in the method of calculating productivity by the U.S. Bureau of Mines and partly to the labor strike which affected coal mine operations. However, once again the productivity level achieved by Illinois underground mines was among the highest in the nation.

For strip mining, the average productivity level achieved by Illinois mines was 26.49 tons per man-day—26 percent lower than the 1973 level. The decline in strip-mine productivity is due in part to the increase in average thickness of overburden that must be removed before the coal can be extracted and in part to the production losses that various Illinois strip mines experienced during 1974 (fig. 4).

Prices—The average price of Illinois coal, f.o.b. mine, in 1974 was \$10.00 per ton, 49.0 percent higher than the 1973 level. The average price, f.o.b. mine, of coal mined underground in Illinois in 1974 was \$11.12 per ton—\$2.42 higher than the price of strip-mined coal.

Shipments—Illinois coal is shipped to various parts of the United States for use by electric utilities, for manufacturing coke, and for

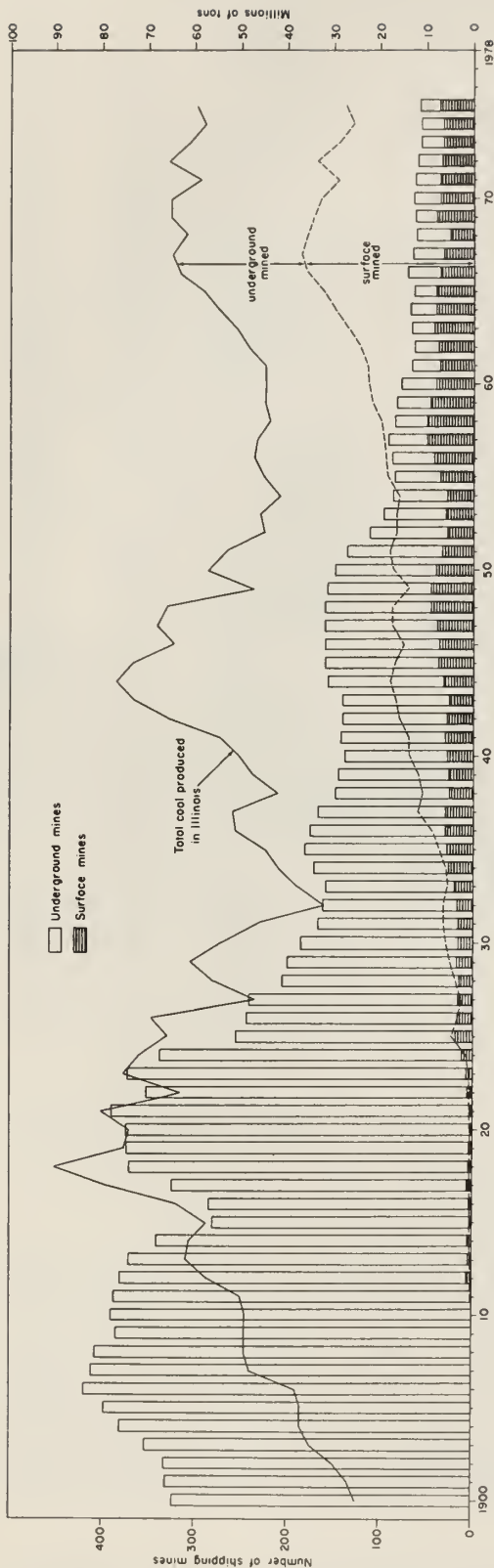


Fig. 3 - Trends in coal production in Illinois, 1900-1975.

TABLE 10—COAL MINES, MINING EMPLOYEES, AND AVERAGE PRODUCTION AND AVERAGE NUMBER OF EMPLOYEES IN ILLINOIS, BY METHOD OF MINING, 1965-1974

Year	Underground				Strip			
	No. of mines	No. of employees	Av. output per mine (tons)	Av. no. of employees per mine	No. of mines	No. of employees	Av. output per mine (tons)	Av. no. of employees per mine
1974	23	8,718	1,352,353	397	32	3,749	842,767	117
1973	24	7,794	1,357,390	325	32	3,615	905,354	113
1972	26	7,870	1,219,838	303	33	3,367	1,024,412	102
1971	27	7,088	1,090,886	263	36	3,483	804,481	97
1970	29	6,785	1,090,192	234	35	3,429	950,530	98
1969	28	5,944	1,077,594	212	34	3,647	1,019,411	107
1968	36	6,028	724,568	167	33	3,510	1,092,686	106
1967	33	5,392	837,879	163	44	3,413	844,654	78
1966	36	5,566	753,671	155	48	3,428	751,678	71
1965	43	5,470	594,685	127	54	3,320	604,834	61

Source: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1974.

TABLE 11—ILLINOIS COAL PRODUCTION, BY COMPANY, 1974

Rank	Company	Number of mines		Production (tons)	Percent of state's total production	Number of employees
		Under-ground	Strip			
1	Peabody Coal	5	4	14,770,499	25.43	3,436
2	Freeman United Coal Mining	3	3	6,952,073	11.97	2,005
3	Consolidated Coal	1	4	6,428,677	11.07	1,126
4	Southwestern Illinois Coal	—	2	5,562,353	9.58	423
5	Old Ben Coal	3	—	5,369,480	9.25	1,358
6	AMAX Coal	1	3	5,070,573	8.73	676
7	Zeigler Coal	4	—	3,316,947	5.71	1,022
8	Monterey Coal	1	—	2,479,763	4.27	441
9	Inland Steel	1	—	2,469,434	4.25	587
10	Midland Coal	—	4	2,352,110	4.05	615
11	Sahara Coal	2	1	2,232,157	3.84	582
12	Roberts & Associates	—	1	595,779	1.03	78
13	Harrisburg Coal	1	—	99,803	0.82	28
14	Jader Coal	—	1	87,316		10
15	Elk Coal	—	1	66,324		12
16	Brown Brothers Excavating	—	1	55,736		11
17	Big Ridge Coal	—	1	54,868		9
18	E & B Coal	—	1	40,776		9
19	Tab Mining	—	1	29,447		15
20	Cold Water Coal	—	1	13,855		2
21	Houston Coal	—	1	10,415		3
22	V-Day Coal	1	—	5,470		15
23	E & L Coal	—	1	4,857		2
24	Hazel Dell Coal	—	1	3,928		2
Totals		23	32	58,072,640	100.00	12,467
						Underground: 8,718
						Strip: 3,749

Source: Illinois Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1974.

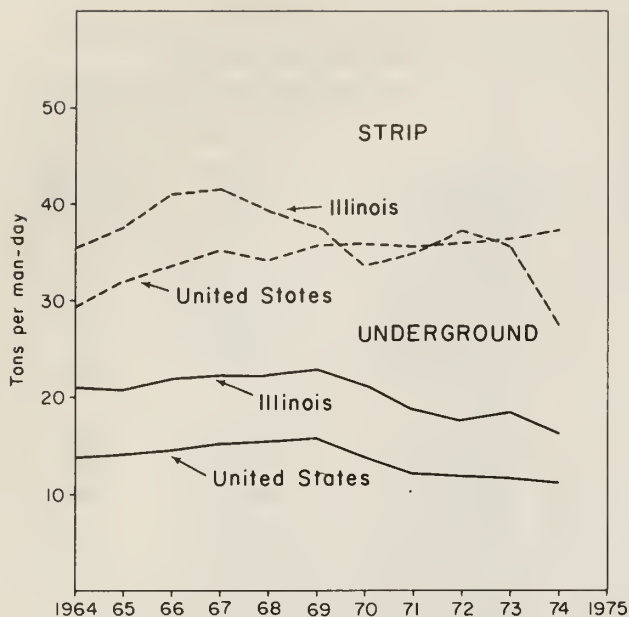


Fig. 4 - Trends in coal mine productivity, 1964-1974.

coals from western states that meet the required standards for the emission of sulfur oxides.

other industrial uses. Of the 59.1 million tons of Illinois coal shipped in 1974, including mine stocks, 46.9 million tons was used by electric utilities, 4.7 million tons by coke plants manufacturing metallurgical coke, and 7.1 million tons by industrial plants. Some 482,000 tons was sold at retail (table 12). About 47 percent of the Illinois coal shipped to electric utilities was consumed within the state; the rest was shipped to surrounding midwestern states and to the southeastern states. In 1974, utilities coal shipment to Missouri and Indiana showed a definite increase. The market for Illinois utility coal is showing definite growth in Missouri; but in Minnesota, Iowa, and Wisconsin and within the state, Illinois coal is losing its utility market to the low-sulfur

TABLE 12—ILLINOIS COAL SHIPMENTS, BY STATE DESTINATION AND CONSUMING SECTOR, 1970-1974 (thousand tons)

Consuming sector	Wisconsin	Minnesota	Iowa	Michigan	Missouri	Indiana	Kentucky	Other states*	Exports† and miscellaneous	Illinois	Total
Electric utilities											
1970	6,115	2,917	2,731	154	5,702	2,667	2,804	1,475	492	25,688	50,745
1971	5,206	2,258	3,043	424	5,934	2,409	3,803	2,271‡	4	22,204	47,556
1972	5,526	2,490	3,306	323	7,042	2,731*	3,595	2,795‡	—	25,329	53,137
1973	4,599	1,574	2,714	680	8,014	2,167*	2,923	2,892‡	51	24,091	49,705
1974	4,134	1,531	2,304	461	9,148	3,028*	2,006	2,409	7	21,828	46,856
Coke and gas plants											
1970	—	—	—	—	—	2,871	—	—	128	1,618	4,617
1971	—	—	—	—	—	2,589	—	41	172	1,424	4,226
1972	—	—	—	—	—	2,810*	—	—	182	1,288	4,280
1973	—	—	—	—	—	3,164*	—	—	126	1,148	4,438
1974	—	—	—	—	—	3,361*	—	—	237	1,054	4,652
Retail dealers											
1970	66	29	40	22	79	22	—	—	9	1,015	1,282
1971	50	26	17	18	43	19	—	—	3	723	899
1972	15	27	16	1	79	220	—	—	3	630	991
1973	2	17	14	—	168	43	—	—	2	417	663
1974	4	4	16	2	136	20	—	—	9	291	482
All others											
1970	1,078	88	1,320	605	1,258	844	—	66	69	5,657	10,985
1971	746	64	965	446	1,156	526	—	—	7	4,189	8,099
1972	793	59	1,130	318	1,553	492	—	—	14	4,084	8,443
1973	645	106	1,151	397	1,367	639	—	—	12	3,419	7,736
1974	556	18	867	473	1,464	513	—	—	29	3,193	7,113
Totals											
1970	7,259	3,034	4,091	781	7,039	6,404	2,804	1,541	698	33,978	67,629
1971	6,002	2,348	4,025	888	7,133	5,543	3,803	2,312	186	28,540	60,780
1972	6,334	2,576	4,452	642	8,674	6,253	3,595	2,795	199	31,331	66,851
1973	5,246	1,697	3,879	1,077	9,549	6,013	2,923	2,892	191	29,075	62,542
1974	4,694	1,553	3,187	936	10,748	6,992	2,006	2,409	282	26,366	59,103

* Includes Alabama and Mississippi (1970-1974), Georgia and Florida (1970-1974), Tennessee (1969-1974), Ohio (1974), and North Dakota (1974).

† Primarily to Mexico.

‡ Estimated.

§ Includes minor amount of industrial and/or retail coal.

Source: U.S. Bureau of Mines Bituminous Coal and Lignite Distribution Quarterly, 1970-1974.

More than 22 percent of the Illinois coal shipped for coking purposes was consumed in Illinois, and most of the remainder was shipped to nearby coke plants in northwestern Indiana. Since 1969, some coking coal from Illinois mines has been shipped to Mexico. In 1974, coking coal shipments to Mexico totaled 237,000 tons.

Slightly more than 60 percent of the retail coal shipped from Illinois mines in 1974 was consumed within the state. The rest was shipped to nearby upper midwestern states, of which Indiana and Missouri were the largest consumers.

Approximately half of the Illinois coal used for other industrial purposes in 1974 was consumed within the state. In order of amount consumed, the other important consumers of industrial coal from Illinois were Missouri, Iowa, Wisconsin, and Indiana.

Transportation—Illinois coal was shipped from the mine to the consuming sector by railroad, barge, truck, or conveyor belt in 1974. At mine sites 47.6 million tons of coal were loaded on railroad cars for shipment. Of this amount, 19.7 percent (9.4 million tons) was moved to docks for shipment by barge. More than 24 million tons of the total amount of coal loaded at the mines was shipped by unit trains. The total amount of coal shipped by barge was 13.6 million tons. Coal shipped by truck totaled 1.5 million tons. The other 4.2 million tons was shipped to mine-mouth electric generating plants by conveyor belt.

Tonnages of Illinois coal handled by specific railroads in 1974 are:

<u>Railroads</u>	<u>Tons</u>
Illinois Central Gulf Railroad Co.	14,268,267
Missouri Pacific Lines	8,311,295
Burlington Northern, Inc.	5,388,872
Chicago and Northwestern Transportation Co.	3,245,889
Penn Central Transportation Co.	2,762,361
Chicago and Eastern Illinois Railroad	2,475,961
Others	<u>11,165,535</u>
Total coal shipped by rail	47,618,180

Of the 13 railroads handling Illinois coal in 1974, the top three handled 58 percent of the total; Illinois Central Gulf handled 30 percent.

Consumption—Coal consumed in Illinois during 1974 totaled 39.1 million tons (table 13), 3.9 percent less than the amount consumed in 1973. The coal-consuming sectors included electric utilities (79.3 percent), coke and gas plants (7.9 percent), retail dealers (1.9 percent), and industrial and other users (10.8 percent).

Of the total 39.1 million tons of coal used in Illinois in 1974, 26.4 million tons, or 67.5 percent, was shipped from mines within the state. The amount of coal shipped from mines in Illinois for use in Illinois is steadily declining. In 1969, 36.4 million tons, or 80.5 percent, came from Illinois mines. The decline in the use of Illinois coal within the state is

TABLE 13—SHIPMENT OF COAL FOR CONSUMPTION IN ILLINOIS,
BY STATE OF ORIGIN AND BY CONSUMING SECTOR, 1970-1974
(thousand tons)

Consuming sector	Illinois	Western Kentucky	Indiana	West Virginia and eastern Kentucky*	Ohio and eastern Pennsylvania	Northwestern and southwestern states†	Total coal consumed in Illinois‡
Electric utilities							
1970	25,688	2,175	514	1	—	1,075	29,453
1971	22,204	1,431	604‡	43	—	3,648‡	27,930
1972	25,329	1,586	393	200	—	4,786	32,294
1973	24,091	1,662	341‡	142	—	6,229	32,465
1974	21,828	1,115	367	96	—	7,431	30,837
Coke and gas plants							
1970	1,618	—	—	2,070	—	—	3,688
1971	1,424	—	50‡	1,847	26	‡	3,347
1972	1,288	—	—	1,955	—	—	3,243
1973	1,148	—	—	1,820	—	—	2,968
1974	1,054	—	—	2,022	24	—	3,100
Retail dealers							
1970	1,015	237	2	1,329	5	3‡	2,591
1971	723	59	1‡	1,082	4	2‡	1,871
1972	630	13	9	759	2	2‡	1,415
1973	417	6	—	511	—	—	934
1974	291	3	—	419	—	59	772
All others							
1970	5,657	188	245	476	13	—	6,579
1971	4,189	92	170‡	689	1	‡	5,141
1972	4,084	118	51	823	—	—	5,076
1973	3,419	111	84‡	647	—	—	4,261
1974	3,193	151	126	597	—	278	4,345
Total							
1970	33,978	2,600	761	3,876	18	1,078	42,311
1971	28,540	1,582	825	3,661	31	3,650	38,289
1972	31,331	1,717	453	3,737	2	4,788	42,028
1973	29,075	1,779	425	3,120	—	6,229	40,628
1974	26,366	1,269	493	3,134	24	7,768	39,054

* Includes tonnages from Virginia and northeastern Tennessee, and North Carolina.

† Montana, Washington, Wyoming, Idaho, Arkansas, Oklahoma, southern Colorado, Utah, and New Mexico.

‡ Includes tonnages from District 15 (Kansas, Missouri, and northeastern Oklahoma).

‡ Estimated.

Source: U.S. Bureau of Mines. Bituminous Coal and Lignite Distribution, Calendar Years 1968-1974.

mainly attributable to the replacement of Illinois coal in the utility market by low-sulfur coal from Wyoming and Montana and in the industrial market by low-sulfur Appalachian coal, natural gas, and fuel oil. In 1974, 19.9 percent of the total coal consumed in Illinois came from western states, including Wyoming, Montana, and Colorado. This was 7 times more than the amount that had been shipped to Illinois from the western states in 1970.

Other states which shipped coal into Illinois for use by electric utilities included Indiana, Kentucky, and West Virginia (table 13). In 1974, of the total 31.0 million tons consumed by Illinois electric utilities, about 25 percent came from western states. The delivered cost of western coal is about twice as much, on an equivalent heat basis, as the cost of Illinois coal. In spite of the high cost, the use of western coal by Illinois electric utilities is expected to grow until a commercial technology to remove sulfur from Illinois coal is developed. In 1973 the Federal Power Commission estimated

that more than 85 percent of the coal being burned by Illinois electric utilities would be prohibited from use when sulfur emission standards are enforced. Sulfur content of Illinois coal is too high to meet requirements of the Federal Environmental Protection Agency (EPA).

Thirty-four percent of the coal used at coke and gas plants in Illinois in 1974 came from Illinois mines; 65 percent came from mines in West Virginia and eastern Kentucky and 1 percent from Ohio and eastern Pennsylvania.

The amount of coal used for industrial and other purposes in Illinois has declined considerably (table 13). In 1974, 4.2 million tons of coal was used for industrial purposes, 36 percent less than the amount consumed in 1970. The principal regions, excluding Illinois, that supply coal for Illinois industrial use were eastern and western Kentucky and West Virginia. Some coal for industrial use also was shipped from Indiana and from western states.

Illinois mines supplied 38.4 percent of the coal sold by Illinois retail dealers. West Virginia and Kentucky mines supplied 55.7 percent; the western states supplied the rest.

Crude Oil

Production—Illinois crude oil production in 1974 totaled 27.6 million barrels—10.2 percent less than that of 1973. At an average unit value of \$8.87 per barrel, the production was valued at \$244 million (table 14). Of the 27.6 million barrels produced in 1974, 19.2 million barrels were recovered by waterflooding, a secondary recovery method. The number of wells actively operating in Illinois during 1974 totaled 23,630.

Forty counties produced crude oil in 1974. The ten that contributed more than 74 percent of the oil production in 1974 were:

County	(%)	County	(%)
Lawrence	12.8	Clay	4.4
White	11.4	Crawford	3.9
Marion	10.7	Richland	3.9
Wayne	10.5	Wabash	3.7
Fayette	10.3	Hamilton	2.9

Together these counties produced 74.5 percent of the Illinois total.

In 1974, 333 oil fields were producing in Illinois, but more than 67 percent of the production came from the 10 fields listed in table 15. The southeastern Illinois area, which contains a number of fields, accounted for 18 percent of the state's total production. The four largest fields—Southeastern Illinois, Clay City Consolidated, Salem Consolidated, and Loudon—accounted for one half of the crude oil production in Illinois in 1974.

The trend in Illinois oil production is shown in figure 5. The highest production was achieved in 1940. From 1941 through 1953 total crude oil production steadily declined. Primary production, after remaining stable from

TABLE 14—CUMULATIVE PRODUCTION OF
CRUDE OIL IN ILLINOIS, BY COUNTY,
1888-1974

County	Cumulative production, 1888-1974* (1000 bbl)	1974		Value† (\$1000)
		production (1000 bbl)	Percent of total Illinois production	
Adams	184	2	0.0	18
Bond	7,207	41	0.1	364
Brown	231	4	0.0	35
Champaign	7	—	—	—
Christian	24,836	290	1.1	2,572
Clark-Cumberland	89,648	598	2.2	5,304
Clay	129,668	1,212	4.4	10,750
Clinton	82,992	513	1.9	4,550
Coles	22,656	169	0.6	1,499
Crawford	226,457	1,088	3.9	9,650
De Witt	2,594	156	0.6	1,384
Douglas	3,566	8	0.0	71
Edgar	3,480	101	0.4	896
Edwards	45,118	397	1.4	3,521
Effingham	15,511	229	0.8	2,031
Fayette	384,662	2,846	10.3	25,244
Franklin	69,936	513	1.9	4,550
Gallatin	49,146	521	1.9	4,621
Hamilton	130,709	812	2.9	7,202
Jasper	49,677	637	2.3	5,650
Jefferson	80,709	760	2.8	6,741
Lawrence	382,863	3,513	12.8	31,160
Macon	896	6	0.0	53
Macoupin	239	3	0.0	27
Madison	17,092	89	0.3	789
Marion	400,236	2,944	10.7	26,113
McDonough-Hancock†	5,413	33	0.1	293
Monroe	2	—	—	—
Montgomery	117	4	0.0	5
Moultrie	95	2	0.0	18
Perry	756	16	0.0	142
Randolph	4,285	70	0.3	621
Richland	98,774	1,063	3.9	9,429
St. Clair	3,295	28	0.1	248
Saline	20,741	208	0.8	1,845
Sangamon	2,716	162	0.6	1,437
Schuyler	1	—	—	—
Shelby	1,581	29	0.1	257
Wabash	105,382	1,012	3.7	8,976
Washington	29,179	704	2.6	6,244
Wayne	233,750	2,901	10.5	25,732
White	273,267	3,152	11.4	27,958
Williamson	1,722	200	0.7	1,774
Other*	2,515	521	1.9	4,621
Totals	3,003,911	27,553	100.0	\$244,395

* 1974 production includes 521,000 barrels that could not be assigned to individual fields or counties.

† No oil production reported for Hancock County 1971-1974

‡ Value calculated at average price of \$8.87 per barrel.

§ 539 barrels.

1947 through 1949, declined until the introduction of the hydrofrac method of well completion in 1954. This technique, coupled with greatly increased activity in waterflood development, briefly reversed a downward trend in production. As major emphasis shifted to waterflood development, nearly stable production was maintained from 1955 through 1963. Since then both waterflood and primary production rates have been steadily declining. The extent of the depletion of reserves can be seen by comparing the January 1, 1956, figure of 701,300,000 barrels with the 159,789,000 barrels reported as of January 1975.

Refineries—According to the U.S. Bureau of Mines, 11 refineries were operating in Illinois in January 1976. They had a total capacity of 1,174,200 barrels per calendar day—1.6 percent higher than the capacity a year earlier.

During 1974, 292.9 million barrels of crude oil were received at Illinois refineries, including 265.3 million barrels from other states or from foreign countries; the rest was of Illinois origin.

Substitute Natural Gas Plants—During 1972 and 1973, five petroleum substitute natural gas (SNG) plants were slated for construction in Illinois. The only SNG plant that was operating in Illinois in 1974 is at Minooka, Grundy County. The plant is

TABLE 15—ILLINOIS PRODUCTION OF
CRUDE OIL, BY MAJOR FIELD, 1974

Field	County	Crude oil production (1000 bbl)	Percentage of state total		
Southeastern Illinois	Wabash Lawrence Crawford Clark Cumberland Jasper	4,933.0	17.9		
Clay City Consolidated	Clay Wayne Richland Jasper				
Salem Consolidated	Marion Jefferson			2,782.0	10.1
Louden	Fayette Effingham				
New Harmony Consolidated	White Wabash Edwards			1,437.4	5.2
Sailor Springs Consolidated	Clay Jasper Effingham				
Roland Consolidated	White Gallatin	731.2	2.7		
Dale Consolidated	Franklin Hamilton Saline			558.3	2.0
Johnsonville Consolidated	Wayne	553.1	2.0		
Phillipstown Consolidated	White Edwards	517.1	1.9		
Subtotal				18,482.4	
Others		9,070.6	32.9		
Total		27,553.0	100.0		

Source: Illinois State Geological Survey Oil and Gas Section.

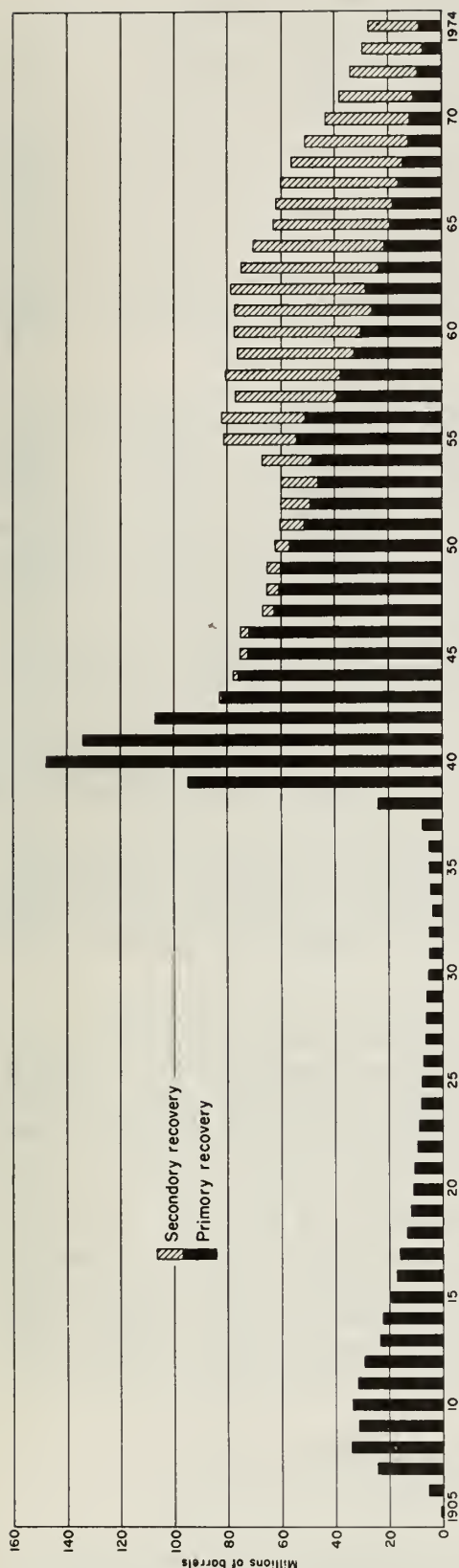


Fig. 5 - Annual crude oil production in Illinois, 1905-1974.

operated by the Northern Illinois Gas Company, and gas produced there is supplied to the Chicago suburban area. A second plant, owned by the Peoples Gas, Light and Coke Company of Chicago, was under construction in 1974 and started production in 1975.

Consumption—Consumption of major petroleum products in Illinois from 1970 through 1974 is shown in table 16. In 1974, gasoline consumption in Illinois decreased by 0.8 percent and represented 5.1 percent of the total amount of gasoline consumed in the United States.

Consumption of distillate fuel oil use increased 0.34 percent, and use of residual fuel oil decreased 2.3 percent.

In Illinois during 1974, consumption of kerosine decreased by 27 percent and consumption of liquefied gas increased by 11.2 percent. The use of asphalt products in the state decreased by 13 percent in 1974.

Natural Gas

Production—Natural gas is produced in Illinois from gas wells and oil wells. No gas from oil wells is marketed; either it is used for lease fuel in oil-producing operations or it is flared. In 1974, 1,436 million cubic feet of natural gas was marketed (table 17) at an average well-head price of 40¢ per thousand cubic feet. The value of the marketed gas is calculated as \$574,000.

In spite of a 12.3 percent decrease from 1973 through 1974, the amount of natural gas marketed from Illinois fields has increased considerably in most of the last few years. In 1970, 198 million cubic feet was marketed, but the 1974 marketed production was more than 7 times that figure. The sharp rise in marketed

TABLE 16—CONSUMPTION OF MAJOR PETROLEUM PRODUCTS IN ILLINOIS, 1970-1974

Product	Unit	1974	1973	1972	1971	1970
Gasoline (excluding naphtha)*	thousand bbl	119,637	120,558	115,526	109,818	105,323
Kerosinet†	thousand bbl	3,274	4,485	4,317	3,234	3,583
Distillate fuel oil†	thousand bbl	54,050	53,865	55,276	49,467	45,517
Residual fuel oil†	thousand bbl	28,532	29,195	29,581	22,835	28,618
Liquefied gases‡	thousand					
Propane	gal	724,708	650,115	644,123	587,372	586,713
Butane		9,413	9,597	7,176	7,602	7,466
Butane-propane mix		319	801	1,546	1,101	1,429
Total		734,440	660,513	652,845	596,075	595,608
Asphalt‡	tons	1,792,502	2,060,144	1,565,675	1,910,674	2,105,700
Road oil‡	tons	179,891	236,972	210,660	236,917	322,629

* American Petroleum Institute Weekly Statistical Bulletins.

† U.S. Bureau of Mines Sales of Fuel Oil and Kerosine, Annual Statements, 1970-1974.

‡ U.S. Bureau of Mines Sales of Liquefied Petroleum Gases and Ethane, Annual Statements, 1970-1974.

§ U.S. Bureau of Mines Sales of Asphalt, Annual Statements, 1970-1974.

production results mainly from (1) new production of gas from the Devonian formations of the Mattoon field (table 18), and (2) increases in the wellhead price.

At present, natural gas is recovered in four counties—Coles, Williamson, Saline, and Gallatin (table 18). The leading fields include Mattoon in Coles County (95.6 percent of the total production), Eldorado East in Saline and Gallatin Counties, Raleigh in Saline County, and Johnson City East in Williamson County.

Consumption—In 1974, consumption of natural gas in Illinois (1,163.2 billion cu ft) remained at approximately the level achieved in 1973 (1,163.8 billion cu ft) (table 19). The decline of 6.4 percent in consumption from the 1971 level is by no means an indication of a diminished demand for the commodity, but, rather, a reflection of the decreasing supply of natural gas (fig. 6).

In 1974, of the total amount of gas consumed in Illinois (1,163 billion cu ft), 97.2 percent (1,130 billion cu ft) was delivered to consumers and the remaining 2.8 percent was lost in extraction, used for pipeline fuel, or burned as lease plant fuel. The consumption of natural gas by consumer class is shown in figure 6. The only two sectors that increased consumption were residential (3.6 percent) and electric utilities (7.5 percent).

Industrial and Construction Materials

Clays

Production—The types of clays mined in Illinois include common clay; refractory, or fire, clay; and absorbent clay (also referred to as fuller's

earth). In 1974, a total of 1,587,046 tons of clay, excluding fuller's earth, was produced in Illinois. Of this total, 93.5 percent was common clay and the rest was refractory. In addition, a small amount of absorbent clay was produced in Illinois during 1974. At an average unit value of \$2.36 per ton, the clays produced in Illinois were valued at \$3.7 million, \$0.1 million higher than the value reported for 1973.

Clays were mined in 13 Illinois counties. The largest amount, 972,374 tons (61.3 percent), was mined in La Salle County. Nine counties and 12 companies (15 operations) reported production of common clay and shale. In 1974, refractory clay was mined in three counties by three companies, the same as in 1973. Pulaski County, which has only one mining company, continued to be the only county to produce absorbent clay.

Trends in Illinois clay production are shown in figure 7. Production, which declined sharply in 1969, rose from 1971 through 1973, but in 1974 plunged to a new low, the lowest in more than two decades.

Consumption and Uses—The common clays and shales produced in Illinois are used principally in the manufacture of brick, sewer pipe, drain tile, cement, and lightweight aggregate. Of the 1.6 million tons of common clays produced in 1974, 29.8 percent was used in the production of common and face brick, 4.8 percent in the manufacture of sewer pipe and drain tile, and most of the rest in the production of cement and lightweight aggregates.

In 1974, production of clays for common and face brick decreased to 18.6 percent below the 1973 production level.

Refractory clay produced in Illinois was used in the manufacture of refractory brick, stoneware, and other clay products. In spite of an increase

TABLE 17—PRODUCTION OF NATURAL GAS IN ILLINOIS, 1970-1974

Year	Production (million cu ft)				
	Withdrawals		Total	Disposition	
	From gas wells	From oil wells		Marketed	Flared
1970	198	4,774	4,972	198	4,774
1971	498	3,997	4,495	498	3,997
1972	1,194	1,806	3,000	1,194	1,806
1973	1,638	NA	1,638	1,638	NA
1974	1,436	NA	1,436	1,436	NA

NA - Data not available.

Source: U.S. Bureau of Mines, Minerals Yearbooks, 1970-1974.

TABLE 18—PRODUCTION OF NATURAL GAS IN ILLINOIS, BY FIELD AND COUNTY, 1973-1974

Gas field	County	Production (million cu ft)		Change from 1973 to 1974 (%)
		1974	1973	
Eldorado East	Saline and Gallatin	13.2	71.4	-81.5
Harco East	Saline	38.3	21.0	+82.4
Johnson City East	Williamson	3.4	44.2	-92.3
Mattoon	Coles	1,372.7	1,394.1	-1.5
Omaha	Gallatin	4.1	39.7	-89.7
Pittsburgh North	Williamson	—	1.4	—
Raleigh	Saline	4.1	47.2	-91.3
Stiritz	Williamson	.2	18.6	-98.9
Total		1,436.0	1,637.6	-12.3

Source: Illinois State Geological Survey Oil and Gas Section.

TABLE 19—CONSUMPTION OF NATURAL GAS IN ILLINOIS, BY CONSUMER CLASS, 1973 AND 1974

Consumer class	1974	1973	Change from 1973 to 1974 (%)	Percent of total consumption
	Quantity (million cu ft)	Quantity (million cu ft)		
Residential	461,746	445,723	+3.6	39.7
Commercial	212,922	212,922	0	18.3
Industrial	409,573	424,573	-3.5	35.2
Electric utilities	42,792	39,823	+7.5	3.7
Other consumers*	3,192	5,608	-43.1	0.3
Total delivered to consumers	1,130,225	1,128,649	-0.1	97.2
Other uses†	39,990	35,151	+6.1	2.8
Total consumption	1,169,215	1,163,800	-0.1	100.0

* Includes municipalities and public authorities that use natural gas for institutional heating, street lighting, and other purposes.

† Includes lease and plant fuel, pipeline fuel, and extraction loss.

Source: U.S. Bureau of Mines.

from the 1973 production, refractory clay production in 1974 (102,585 tons) was 58.4 percent below the 1968 production of 246,740 tons.

Illinois production of absorbent clay also has declined in the past 6 years. Most of the absorbent clay produced in Illinois is used as animal litter or in pesticides and related products.

Fluorspar

Production—In 1974 Illinois continued to be the leading fluorspar-producing state, contributing 76.4 percent of the nation's total fluorspar shipments. Illinois produced 170,008 tons and shipped 153,698 tons of finished fluorspar during 1974. Of the total shipped, 69,204 tons were of acid grade (more than 97 percent calcium fluoride) and 84,494 tons were of metallurgical grade (less than 97 percent calcium fluoride) (table 20).

All the fluorspar ore mined in Illinois came from Hardin and Pope Counties, where mining operations on a regular basis are carried out by the Minerva Oil Company and the Ozark-Mahoning Company.

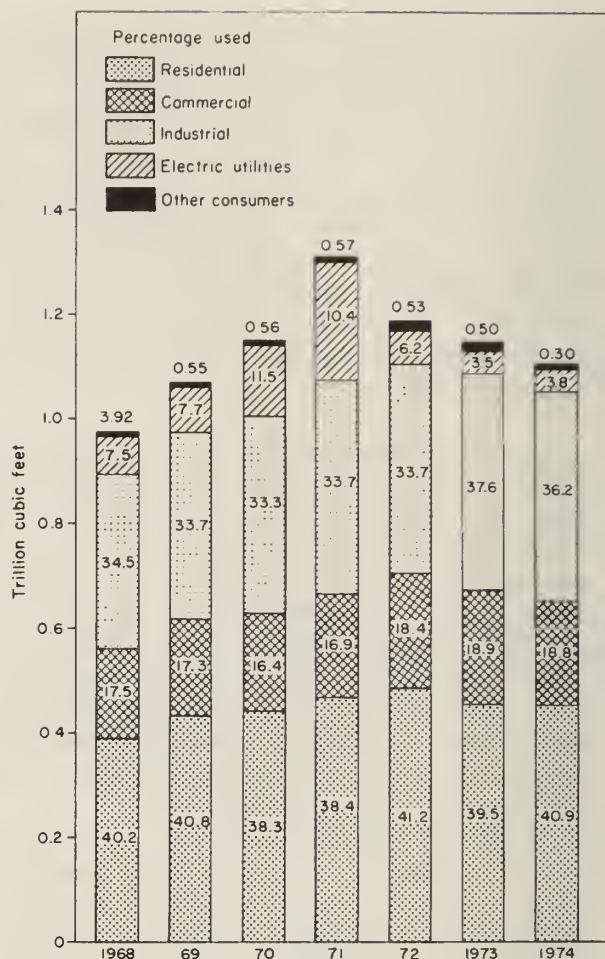


Fig. 6 - Consumption of natural gas in Illinois, 1968-1974.

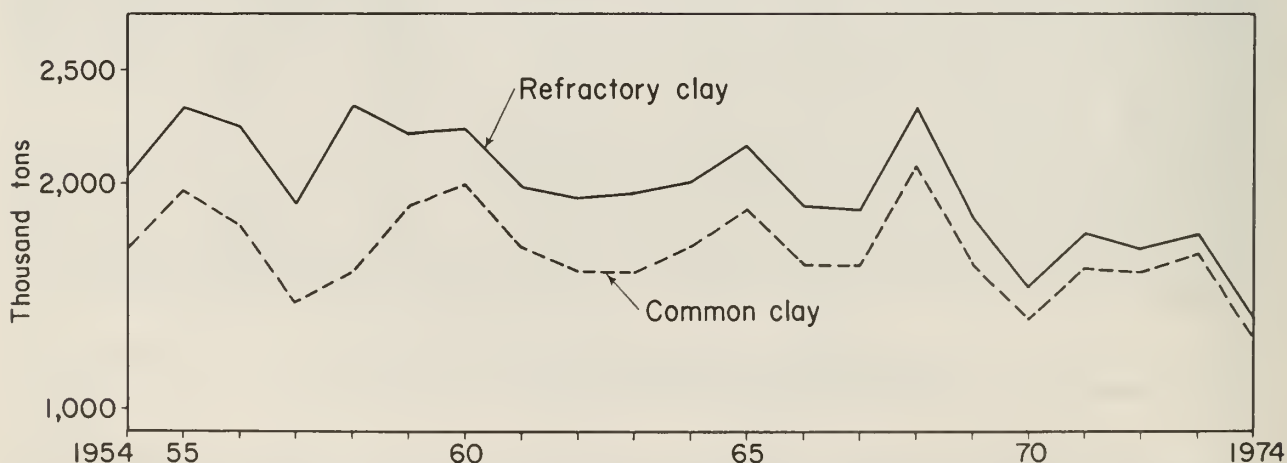


Fig. 7 - Trends in Illinois clay production, 1954-1974.

TABLE 20—FLUORSPAR SHIPMENTS AND CONSUMPTION, ILLINOIS
AND UNITED STATES, 1965-1974

Year	Shipments (tons)					Consumption (tons)		
	Illinois		United States total	Illinois shipments as percentage of U.S. shipments				Illinois consumption as percentage of U.S. consumption
	Acid grade	Metallurgical grade				Illinois	United States*	
1965	88,700	70,440	159,140	66.1		56,697	930,127	6.10
1966	103,568	72,607	176,175	69.6		56,772	1,065,124	5.33
1967	120,388	89,819	210,207	71.1		60,521	1,091,158	5.55
1968	87,152	101,173	188,325	74.6		64,521	1,243,414	5.19
1969	47,776	40,704	88,480	48.5		78,727	1,356,624	5.80
1970	86,729	61,479	148,208	55.1		89,065	1,372,404	6.49
1971	72,514	65,537	138,051	50.7		89,971	1,344,742	6.69
1972	75,188	57,217	132,405	52.9		67,428	1,352,149	4.99
1973	93,062	72,751	165,813	66.7		86,715	1,351,705	6.42
1974	69,204	84,494	153,698	76.4		75,115	1,524,532	4.93

* Fluorspar consumed includes domestic and foreign material.

Source: U.S. Bureau of Mines.

Shipments—In 1974, Illinois producers shipped 1,271 tons of fluorspar ore to foreign countries and 112,094 tons to other states. These shipments accounted for 85.8 percent of the total Illinois fluorspar ore shipments. The remainder, 17,294 tons of ore, was shipped to Illinois consumers.

Consumption—The reported consumption of fluorspar in the United States increased from 1,351,705 tons in 1973 to 1,524,532 tons in 1974. The apparent U.S. consumption (production + imports - exports ± change in stocks) in 1974 totaled 1,428,675 tons, considerably lower (88,662 tons) than the apparent consumption in 1973.

In 1974, Illinois consumed 75,115 tons of fluorspar, or about 4.9 percent of the total amount of fluorspar consumed in the United States. Illinois consumption as a percentage of the total United States consumption decreased, while Illinois shipments as a percentage of United States shipments increased in 1974 (table 20). The decrease in Illinois consumption of fluorspar was due primarily to the decline in production of raw steel. In 1974, Illinois raw steel production totaled 12.9 million tons—3.6 percent lower than the 1973 level. Fluorspar is used as a flux in the steel industry.

Sand and Gravel

Production—Sand and gravel deposits are widely distributed throughout Illinois. The principal sources of commercial sand and gravel are glacial deposits, chiefly valley trains and outwash plains. In 1974, Illinois produced 17 million tons of sand (excluding industrial sand) and 24 million tons of gravel. At a per ton value of \$1.61, Illinois sand and gravel production was valued at \$68.6 million. The 1974 sand and gravel production decreased 7.5 percent in tonnage and decreased 11.1 percent in value from the 1973 levels. The number of counties producing sand and gravel in 1974 totaled 64 (table 21 and fig. 8).

Sand and gravel was produced by 203 companies at 232 operations. The quantity of industrial sand produced in Illinois during 1974 was just over 2 million tons, a drop of more than 50 percent from the 1973 production. At a unit value of \$4.19, the value of industrial sand produced in Illinois is

TABLE 21—SAND AND GRAVEL PRODUCED AND MODE OF TRANSPORTATION,
BY COUNTY, IN 1974

County	Number of companies	Number of operations	Quantity (1000 tons)				Total produced	Value (\$10,000)	Mode of Shipment*			
			Sand	Gravel	Industrial sand	Undiffer- entiated			Truck	Rail	Barge	Undistributed
Adams	1	1	W	W	—	—	W	W	W	—	—	—
Alexander	1	1	—	—	—	18	18	8	18	—	—	—
Bond	3	3	W	W	—	W	221	258	221	—	—	—
Boone	2	2	W	W	—	—	W	W	W	—	—	W
Brown	1	1	—	—	—	W	W	6	W	—	—	—
Bureau	10	10	253	236	—	69	558	904	558	—	—	—
Champaign	6	7	402	267	—	W	669†	993	645†	—	—	24
Clark	3	4	97	310	—	W	407†	617	407†	—	—	—
Clinton	4	4	W	W	—	W	145	168	145	—	—	—
Coles	2	3	W	W	—	24	W	W	W	—	—	—
Cook	4	4	347	643	—	20	1,010	1,703	1,010	—	—	—
Crawford	3	3	47	240	—	140	427	318	427	—	—	—
Cumberland	1	1	30	31	—	—	61	123	61	—	—	—
De Kalb	4	4	W	W	—	W	219	344	170	—	—	49
De Witt	1	1	W	W	—	—	W	W	W	—	—	—
Du Page	4	5	W	W	—	W	1,063	2,210	1,063	—	—	—
Fayette	2	2	W	W	W	W	W	W	W	—	—	—
Ford	4	6	222	79	—	125	426	624	278	—	—	148
Fulton	4	4	W	158	—	40	198†	415	198†	—	—	—
Gallatin	2	2	W	W	—	—	W	W	W	—	—	—
Grundy	1	1	W	—	—	—	W	W	W	—	W	—
Iroquois	1	1	—	—	—	W	W	W	W	—	—	—
Jackson	1	1	W	—	—	—	W	W	W	—	—	—
Jasper	1	1	—	13	—	—	13	19	13	—	—	—
Jo Daviess	1	1	W	W	—	W	W	W	W	—	—	—
Kane	11	17	2,202	3,808	—	457	6,467	9,018	6,467	—	—	—
Kankakee	3	3	W	W	—	W	23	16	23	—	—	—
Kendall	4	6	345	610	—	W	955†	996	955†	—	—	—
Lake	7	8	W	354	—	679	1,033†	1,294	1,033†	—	—	—
La Salle	11	14	373	348	2,084	147	2,951	10,063	2,108	843	—	—
Lawrence	4	4	185	339	—	40	564	688	564	—	—	—
Lee	2	2	W	W	—	—	W	W	W	—	—	—
Livingston	2	2	W	W	—	W	W	W	W	—	—	—
Logan	4	4	55	353	—	30	438	668	438	—	—	—
McHenry	13	16	2,696	3,051	—	504	6,251	8,832	6,216	W	—	W
McLean	2	2	103	34	—	—	137	205	137	—	—	—
Macon	3	3	484	178	—	40	702	1,065	702	—	—	—
Madison	2	2	W	—	—	—	W	W	W	—	—	—
Marshall	1	1	—	37	—	—	37	65	37	—	—	—
Mason	1	1	27	—	—	—	27	35	27	—	—	—
Massac	2	2	W	42	—	—	W	W	W	—	—	—
Mercer	1	1	—	—	—	5	5	9	5	—	—	—
Moultrie	1	1	—	—	—	W	W	W	W	—	—	—
Ogle	2	2	W	W	W†	—	W	W	W	—	—	—
Peoria	2	2	W	W	—	W	W	W	W	—	—	—
Pike	1	1	33	—	—	—	33	44	33	—	—	—
Pulaski	1	1	—	—	—	11	11	7	11	—	—	—
Randolph	1	1	W	—	—	—	W	W	W	—	—	—
Rock Island	3	4	861	120	—	—	981	2,427	W	—	W	—
Sangamon	4	4	730	222	—	W	952†	2,069	952†	—	—	—
Schuyler	1	1	W	W	—	—	W	W	W	—	—	—
Scott	1	1	W	—	—	W	W	W	W	—	—	—
Shelby	2	2	W	W	—	W	W	W	W	—	—	—
Stark	1	1	W	W	—	—	W	W	W	—	—	—
Stephenson	1	1	W	W	—	—	W	187	W	—	—	—
Tazewell	3	7	W	573	—	28	601†	1,811	601†	—	—	—
Union	1	1	—	17	—	—	17	15	17	—	—	—
Vermilion	6	7	W	W	—	W	282	299	266	16	—	—
Wabash	3	3	64	43	—	‡	107	122	107	—	—	—
White	4	4	W	W	—	W	326	443	326	—	—	—
Whiteside	3	3	162	47	—	6	215	358	215	—	—	—
Will	8	8	483	1,160	—	92	1,735	3,088	W	W	—	—
Winnebago	6	8	588	268	—	W	856†	1,147	W	W	—	—
Woodford	5	5	274	572	—	W	846†	1,905	846†	—	—	—
Undistributed*††	3	3	W	W	—	W	538	659	523	W	—	W
Concealmenta							10,180	12,321	11,114	306	2,333	49
State Total	203	232					42,705	\$68,566	38,937	1,165	2,333	270

* From commercial operations only; does not include government and contractor operations.

† Withheld and not included in total.

‡ Industrial sand production not reported, but a new plant was operating in Ogle County.

§ Less than 500 tons.

†† County location not reported.

W - Withheld and not included in total.

Source: U.S. Bureau of Mines.

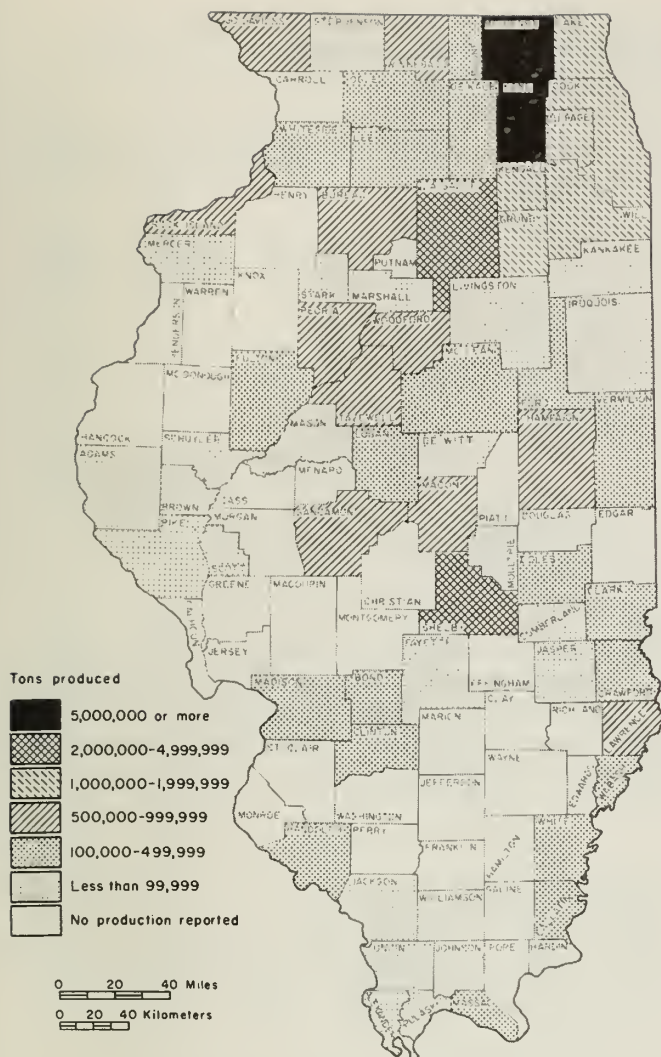


Fig. 8 - Illinois sand and gravel production, by county, 1974. Source: U.S. Bureau of Mines.

estimated to be \$2.08 million. Production of industrial sand was reported from La Salle, Fayette, and Ogle Counties.

The number of operations producing sand and gravel continued to decline, and total production of sand and gravel, which had increased in 1973, declined by 7.5 percent in 1974 (fig. 9). Within the last 10 years, the number of plants producing more than 300,000 tons of sand and gravel has increased from 25 to 37. In table 22

sand and gravel production in 1973 and 1974 is shown by size of operation.

Transportation—The shipment of sand and gravel is restricted largely to areas within a radius of less than 50 miles from the pit site. In 1974, 91.2 percent of total shipments went by truck. Shipment by barge showed a remarkable increase from 0.2 percent in 1973 to 5.5 percent of the total shipments in 1974, while rail shipments decreased from 4.2 percent to 2.7 percent (table 21).

Consumption and Uses—Common sand and gravel produced in Illinois are used primarily for construction aggregate. Of the 34.5 million tons of common sand and gravel produced in 1974, more than 37.7 percent was used for paving, 40 percent for building construction, and the remainder for other uses. In 1974, the quantity of common sand and gravel used for paving decreased 38.4 percent, that used for building decreased 5.8 percent, and that used for fill and other uses increased 54.1 percent from the 1973 levels (table 23).

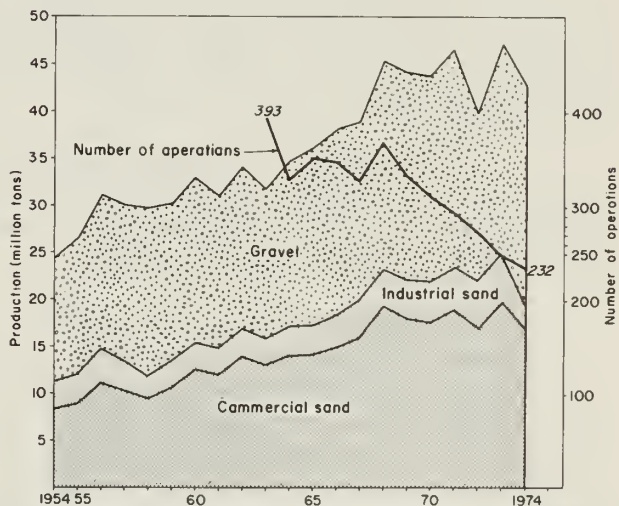


Fig. 9 - Trends in production of sand and gravel in Illinois, 1954-1974.

TABLE 22—ILLINOIS SAND AND GRAVEL
PRODUCTION IN 1973 AND 1974,
BY SIZE OF OPERATION*

Size of operation (tons per year)	1973			1974		
	Number of operations*	Production (thousand tons)	Percentage of commercial production	Number of operations	Production (thousand tons)	Percentage of commercial production
Less than 25,000	58	627	1.6	53	488	1.1
25,000 to 49,999	35	1,233	3.0	34	1,251	2.7
50,000 to 99,999	46	3,251	8.0	45	3,324	7.3
100,000 to 199,999	39	5,545	13.6	38	5,377	11.8
200,000 to 299,999	12	3,029	7.4	13	3,208	7.0
300,000 to 399,999	12	4,361	11.0	12	4,263	9.3
400,000 to 499,999	7	3,036	7.4	8	3,532	7.7
500,000 to 599,999	3	1,612	4.0	5	2,794	6.1
600,000 to 699,999	2	1,317	3.2	3	2,019	4.4
700,000 to 799,999	3	2,156	5.3	2	1,418	3.1
800,000 to 899,999	1	807	2.0	2	1,742	3.8
900,000 to 999,999	4	3,826	9.4	2	1,923	4.2
1,000,000 and over	3	9,819	24.8	8	16,358	35.5
Total	227	40,621	100.0	225	45,697	100.0

* Commercial operations only; does not include government and contractor operations.

Source: U.S. Bureau of Mines.

TABLE 23—ILLINOIS SAND AND GRAVEL
SOLD OR USED BY PRODUCER, BY CLASS
OF OPERATION AND USE, 1973 AND 1974

Class of operation and use	1973		1974		Change in quantity from 1973 to 1974 [X]	Change in value from 1973 to 1974 [X]
	Quantity (1000 tons)	Value (\$1000)	Quantity (1000 tons)	Value (\$1000)		
Construction aggregates						
Sand and gravel						
Commercial operations						
Building	13,780	20,459	14,615	19,425	-5.84	+5.32
Paving	12,988	20,248	21,089	30,342	+58.41	+49.85
Fill	6,947	8,031	4,290	4,404	-61.93	+22.36
Other uses*	788	1,217	724	988	-56.25	+23.18
Total†	24,463	49,955	40,721	55,151	-15.37	+9.42
Government and contractor operations						
Building	278	398	—	—	—	—
Paving	5,536	8,915	463	449	—	—
Fill	322	511	2	2	—	—
Other uses	22	43	—	—	—	—
Total†	6,158	9,873	465	451	—	—
Industrial sand						
Blast	174	702	W	W	—	—
Molding	803	3,476	1,700	NA	-52.76	—
Glass	873	2,805	2,308	NA	-62.18	—
Other uses*	232	1,422	368	NA	-79.80	—
Total†	2,082	8,378	4,976	21,537	-59.12	+59.43
Total sand and gravel	42,705	68,566	46,176	77,158	-7.52	-11.14

* Includes railroad ballast.

† Numbers are rounded; therefore, totals do not necessarily add up.

* Includes engine, filtration, foundry use, grinding and polishing, oil hydrofracture, pottery, abrasives, chemicals, enamel, and other uses.

W - Withheld to avoid disclosing confidential data of individual companies; included under "Other uses."

NA - Data not available.

Source: U.S. Bureau of Mines.

Industrial sand produced in 1974 was sold in unground form for use in glass manufacturing, as molding sand, blasting sand, grinding and polishing sand, engine sand, sand for filtration, and sand for hydrofracturing in oil wells. Ground sand was sold for use in making chemicals, abrasives, enamels, glass, pottery, porcelain, and tile, and for fillers and foundry purposes.

Stone

Production—In spite of a 5 percent decrease in total stone production from 1973 (66.7 million tons) to 1974 (63.2 million tons), the total value increased by 6.8 percent. The total value, \$121.8 million, resulted from an increase in value per ton from \$1.71 (1973) to \$1.93 (1974) (table 24).

Of the 63.2 million tons of crushed and broken stone produced in 1974, 41.1 million tons were limestone and 22.1 million tons were dolomite (table 25). In addition to crushed and broken stone, Illinois produced a small amount of dimension stone (stone quarried and prepared in blocks according to specifications) in Kane County.

In 1974, one dimension-stone quarry and 306 limestone and/or dolomite quarries were operating in Illinois. Sixty-three counties reported stone production in 1974—one fewer than in 1973 (fig. 10). The number of companies producing stone in 1974 was 121.

Illinois stone production by size of operation is shown in table 26. The number of quarries producing less than 100,000 tons of stone per year seems to be declining, while the number of quarries producing between 100,000 and 500,000 tons per year is steadily increasing. Quarries producing more than 500,000 tons per year also are increasing. The increase in size of operation basically reflects the entry of larger companies into the aggregate business. Large companies have sufficient capital to expand an operation and, as a result, benefit from economies of scale.

TABLE 24—PRODUCTION AND VALUE OF ILLINOIS STONE, BY COUNTY
AND MODE OF TRANSPORTATION, 1974

County	Number of quarries	Crushed and broken		Production		Mode of transportation			
		Limestone (tons)	Dolomite (tons)	Tons	Value (\$)	Truck (tons)	Rail (tons)	Barge (tons)	Unspecified (tons)
Adams	9	1,051,785	—	1,051,785	W	785,266	258,597	7,922	—
Boone	3	W	W	W	W	W	—	—	—
Brown	1	W	—	W	W	W	—	—	—
Calhoun	3	25,358	—	25,358	W	25,126	—	232	—
Carroll	7	285,054	—	285,054	421,729	285,054	—	—	—
Christian	3	W	—	W	W	W	—	—	—
Clark	3	W	W	W	W	W	—	—	—
Clay	2	W	—	W	W	W	—	—	—
Clinton	2	W	—	W	W	W	—	—	—
Coles	2	602,607	—	602,607	1,367,510	602,607	—	—	—
Cook	18	W	W	W	W	W	W	—	—
Cumberland	1	217	—	217	499	217	—	—	—
De Kalb	2	W	W	W	W	W	—	—	—
Douglas	1	W	—	W	W	W	—	—	—
Du Page	1	—	W	W	W	W	—	—	—
Fayette	2	W	—	W	W	W	—	—	—
Ford	1	3,995	—	3,995	8,000	3,995	—	—	—
Franklin	1	450	—	450	2,250	450	—	—	—
Greene	4	385,319	—	385,319	W	385,319	—	—	—
Grundy	1	22,494	—	22,494	47,269	22,494	—	—	—
Hancock	3	519,987	—	519,987	1,003,198	W	—	—	—
Hardin	7	2,269,430	—	2,269,430	3,658,752	1,424,590	—	844,840	—
Henderson	4	W	W	W	W	W	—	—	—
Henry	1	W	—	W	W	W	—	—	—
Iroquois	1	W	—	W	W	W	—	—	—
Jackson	1	W	—	W	W	W	—	—	—
Jersey	3	108,796	—	108,796	217,792	108,796	—	—	—
Jo Daviess	16	W	W	302,694	311,995	302,694	—	—	—
Johnson	2	W	—	W	W	W	—	—	—
Kane	4	1,349,482	—	1,349,482	2,577,458	1,349,482	—	—	—
Kankakee	5	W	W	W	W	W	W	—	—
Kendall	1	W	—	W	W	W	—	—	—
Knox	1	W	—	W	W	W	—	—	—
La Salle	8	2,248,914	—	2,248,914	3,474,128	1,939,898	—	—	309,016
Lee	8	W	W	1,604,945	2,654,966	1,604,945	—	—	—
Livingston	7	2,323,277	—	2,323,277	4,776,208	2,323,277	—	—	—
Logan	1	W	—	W	W	W	—	—	—
McDonough	2	W	—	W	W	W	—	—	—
Macoupin	1	W	—	W	W	W	—	—	—
Madison	3	W	—	W	W	W	—	—	—
Marion	2	W	—	W	W	W	—	—	—
Menard	2	W	—	W	W	W	—	—	—
Merger	2	W	—	W	W	W	—	—	—
Monroe	3	W	—	W	W	W	W	—	—
Montgomery	9	1,072,159	—	1,072,159	2,291,175	1,072,159	—	—	—
Ogle	15	509,669	138,500	648,169	1,176,000	648,169	—	—	—
Peoria	1	W	—	W	W	W	—	—	—
Pike	6	484,406	—	484,406	884,464	484,406	—	—	—
Pulaski	1	W	—	W	W	W	W	—	—
Randolph	3	1,193,757	—	1,193,757	2,468,135	575,334	618,423	—	—
Rock Island	7	W	—	W	W	W	—	—	—
St. Clair	5	2,447,679	—	2,447,679	4,680,859	2,444,364	3,315	—	—
Sangamon	1	4,219	—	4,219	15,144	4,219	—	—	—
Scott	3	522,879	—	522,879	993,572	522,879	—	—	—
Shelby	1	W	—	W	W	W	—	—	—
Stephenson	9	324,908	—	324,908	490,564	324,908	—	—	—
Union	3	W	—	W	W	W	W	—	—
Vermilion	4	W	—	W	W	W	—	—	—
Warren	2	W	—	W	W	W	—	—	—
Washington	2	W	—	W	W	W	—	—	—
Whiteside	5	W	—	W	W	W	—	—	—
Will	8	W	W	5,905,683	10,518,131	3,174,102	487,815	2,243,766	—
Winnebago	24	W	W	957,941	1,841,905	957,941	—	—	—
Undistributed*	43	1,292,529	—	1,292,529	2,585,058	1,292,529	—	—	—
Concealed totals		22,075,583	21,965,148	35,269,468	73,225,914	34,478,476	1,310,979	—	—
Totals	307	41,124,953	22,103,648	63,228,601	121,692,675	57,143,696	2,679,129	3,096,760	309,016

* County location not reported by producer.

W - Withheld to avoid disclosing confidential data of individual companies; included in total.

Source: U.S. Bureau of Mines.

TABLE 25—PRODUCTION AND USE OF
CRUSHED AND BROKEN STONE IN
ILLINOIS IN 1974

	Limestone (tons)	Dolomite (tons)	Total (tons)	Percent of total	Change from 1973 (%)	Average value per ton
Road base stone	12,029,200	6,459,220	18,488,420	29.2	-9.3	1.92
Concrete aggregate	6,261,429	4,568,441	10,829,870	17.1	-7.0	1.92
Surface treatment aggregate	2,845,284	W	5,344,698	8.5	+23.1	1.97
Bituminous aggregate	2,823,269	3,127,352	5,950,621	9.4	+6.6	2.03
Unspecified construction aggregate and road stone	6,236,341	1,040,105	7,276,446	11.5	+24.2	1.79
Agricultural purposes*	4,519,857	682,882	5,202,739	8.2	+14.8	1.93
Cement	2,692,962	—	2,692,962	4.2	+23.3	1.39
Macadam aggregate	W	W	3,727,122	5.9	+60.5	2.01
Flux stone	W	W	304,682	0.5	-68.4	1.89
Riprap and jetty stone	542,673	W	687,632	1.1	-27.7	1.98
Railroad ballast	105,345	W	487,642	0.8	-0.3	1.67
Other uses†	1,216,967	1,018,800	2,235,767	3.5	-53.5	2.63
Totals	41,124,953	22,103,648	63,228,601	100.0	5.1	1.93

* Includes agricultural limestone and poultry grit.

† Includes stone for asphalt filler, chemicals, lime manufacture, mine dewatering, filler, roofing aggregate, fill, waste material, whiting, and other uses.

W - Withheld to avoid disclosing confidential data of individual companies; included in total.

Source: U.S. Bureau of Mines.

Shipment—Shipment of stone, a bulk commodity, is to a large extent confined to areas near the quarry. Because the hauling distance is short, most stone is shipped by truck. In 1974, of the state's total production (63.2 million tons), 90.4 percent, or 57.1 million tons, was shipped by truck (table 24). Other modes of shipment included rail (2.7 million tons) and barge (3.1 million tons).

Consumption and Uses—Stone produced in Illinois may be classified as (1) stone for construction aggregate, (2) stone for industrial and chemical use, and (3) stone for agricultural purposes. In 1974, of the 63.2 million tons of stone produced in Illinois, 51.6 million tons (81.6 percent) was used for construction aggregate, 5.2 million tons for agricultural purposes, and 6.4 million tons for industrial, chemical, and other uses (fig. 11).

Of the 51.6 million tons used for construction aggregate, 35.8 percent was used as road base stone, 21.0 percent for concrete aggregate, 10.4 percent for surface treatment aggregate, 11.5 percent

for bituminous aggregate, and the rest (21.3 percent) as macadam and unspecified aggregate.

Stone used for industrial and chemical purposes is high in calcium, usually being more than 95 percent CaO. High-calcium limestone was used in 1974 in the manufacture of cement and lime; in iron and steel making (as fluxstone); for rock dusting mines; and in various chemical industries.

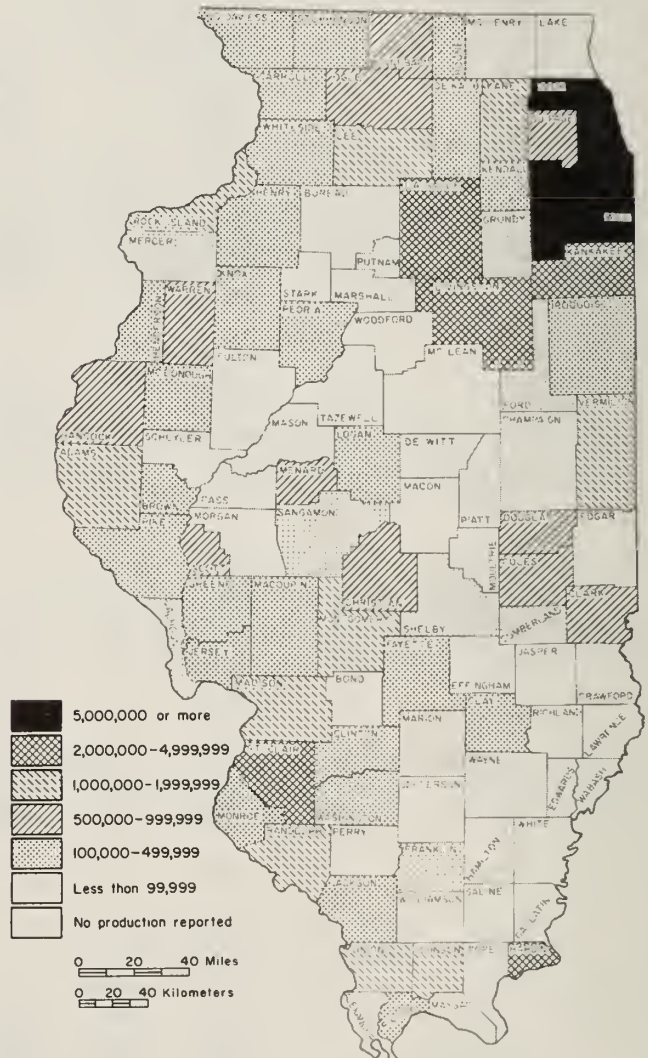


Fig. 10 - Illinois stone production, by county, 1974. Source: U.S. Bureau of Mines.

TABLE 26—ILLINOIS STONE PRODUCTION, 1973 AND 1974, BY SIZE OF OPERATION

Size of operation (tons per year)	1974			1973		
	Number of quarries	Production (tons)	Percent of total	Number of quarries	Production (tons)	Percent of total
Less than 25,000	104	954,629	1.5	105	875,532	1.3
25,000 to 49,999	61	1,901,750	3.0	69	2,911,367	4.4
50,000 to 74,999	15	901,972	1.4	14	846,926	1.3
75,000 to 99,999	13	1,113,317	1.8	12	1,082,912	1.6
100,000 to 199,999	32	4,586,931	7.3	38	6,008,232	9.0
200,000 to 299,999	22	5,380,399	8.5	18	4,405,163	6.6
300,000 to 399,999	19	6,512,424	10.3	21	7,222,913	10.9
400,000 to 499,999	12	5,461,124	8.6	9	4,020,360	6.0
500,000 to 599,999	3	1,588,809	2.5	5	2,751,844	4.1
600,000 to 699,999	7	4,392,282	6.9	3	1,954,473	2.9
700,000 to 799,999	3	2,346,661	3.7	5	3,707,113	5.6
800,000 to 899,999	5	4,192,533	6.6	1	802,000	1.2
900,000 and over	11	23,898,512	37.8	15	20,061,420	45.1
Totals	307	63,231,343	100.0	315	66,650,255	100.0

Source: U.S. Bureau of Mines.

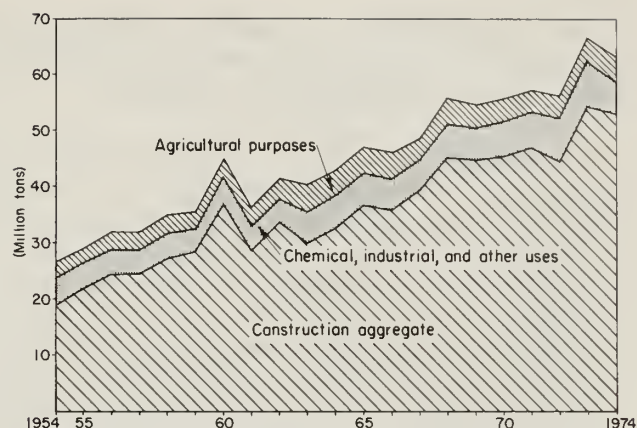


Fig. 11 - Trends in uses of crushed and broken stone produced in Illinois, 1954-1974.

Illinois consumes more limestone for agricultural purposes than any other state in the nation. Primarily because of this large market, Illinois is the leading producer of agstone and ground limestone for other agricultural uses.

More than 80 percent of the dimension stone produced in Illinois was used as flagstone. The rest was used for veneer in house construction.

Tripoli (Amorphous Silica)

Production—The term "tripoli" comprises several fine-grained, porous, siliceous materials mined in five states: tripoli is produced in Arkansas, Missouri, and Oklahoma; amorphous, or soft, silica is mined in Illinois; and rottenstone is produced in Pennsylvania. Illinois has been the largest producer of these siliceous materials in recent years, accounting for more than 60 percent of the total United States production.

During 1974, amorphous silica was produced from underground mines in Alexander County by two companies—the Illinois Minerals Company near Elco, and Tammsco, Inc., near Tamms. The value of unprocessed material used or sold decreased 32.6 percent, whereas the quantity produced decreased 24.2 percent from the 1973 levels. Most of the Illinois production was processed in the state.

Consumption and Uses—The amorphous silica processed in Illinois was used for abrasives and fillers. From 1973 to 1974, the percentage of finished material sold for abrasives increased from 49.2 to 50.0 percent, while that sold for filler decreased from 47.0 to 46.2 percent.

Metals

Lead, Zinc, and Silver

Production—The metals recovered from ore mined in Illinois include lead, zinc, and silver. During 1974, these metals were recovered from fluor-

spar ore mined in Hardin and Pope Counties by the Minerva Oil Company and the Ozark-Mahoning Company.

In 1974, 166,223 tons of fluorspar ore were treated to recover 4,104 tons of zinc, 493 tons of lead, and a small amount of silver (table 27). In terms of recoverable metal, the production of lead decreased 8.9 percent and the production of zinc decreased 21.8 percent from the 1973 levels. The value of lead production increased 26.1 percent and that of zinc 35.9 percent. The closing of both Eagle-Picher mines—the Gray in 1972 and the Bautsch in 1973—is responsible for the more than 50 percent drop in production of lead and zinc in Illinois from 1973 to 1974.

No silver production was reported for Illinois for the years 1957 through 1970, but because of the recent rise in the price of silver it has again been recovered from both fluorspar and lead-zinc ores since 1971. Primarily because of the closing down of the Bautsch mine, the amount and value of silver recovered in 1974 dropped 68.2 and 41.4 percent, respectively, from the 1973 levels. The total amount of silver produced in Illinois remained very small. Data for silver production by individual companies are confidential.

Other Minerals

Other minerals mined in Illinois include peat, gemstones, and germanium.

Peat

Although peat is classified as a fuel by the U.S. Bureau of Mines, it has never been used to any great extent as a fuel in this country. In the United States, 90 percent of the commercial sales (excluding imports) of peat is used for soil improvement.

In 1974, Illinois ranked second, after Michigan, among the 23 peat-producing states and accounted for 13.1 percent of the nation's total peat production. Six companies produced 95,807 tons of peat from Cook, Kane, Lake, and Whiteside Counties. Production increased by 33.9 percent during 1974 (table 28). The three major kinds of peat—reed-sedge, moss, and peat humus—were produced in Illinois.

TABLE 27—PRODUCTION AND VALUE OF LEAD, ZINC, AND SILVER IN ILLINOIS, 1973 AND 1974

	1974	1973
Mines producing, lode*	1	1
Material sold or treated (tons)		
Fluorspar ore	166,223	358,209
Lead-zinc ore	—	66,848
Production, recoverable metal (tons)		
Zinc	4,104	5,250
Lead	493	541
Silver (troy ounces)	W	W
Value (\$1000)		
Zinc	\$2,947	\$2,169
Lead	222	176
Silver	W	W

* Fluorspar operations producing by-product lead and zinc not included in mine count.

W - Withheld to avoid disclosing confidential data of individual companies.

Source: U.S. Bureau of Mines.

TABLE 28—PRODUCTION AND COMMERCIAL SALES OF PEAT IN ILLINOIS,
1970-1974

Year	Number of plants	Production (tons)	Commercial sales (tons)	Value (\$)	Average value per ton (\$)	Illinois production (%)*
1970	6	62,990	63,341	711,000	11.23	12.19
1971	7	72,523	71,823	W	W	12.03
1972	5	69,523	74,003	W	W	12.06
1973	6	71,552	71,551	1,037,000	14.49	8.78
1974	6	95,807	95,807	1,412,000	14.74	13.11

* Illinois production as percentage of United States production.

W - Withheld to avoid disclosing data from individual companies.

Source: U.S. Bureau of Mines.

Gemstones

The gemstone produced in Illinois is fluorspar. The stones contribute very little to the value of total mineral production. The 1974 estimated value for gemstones remained about the same as for 1973 and cannot be disclosed without revealing data from individual companies.

Germanium

Germanium is a minor by-product of the Illinois fluorspar-lead-zinc industry in Hardin and Pope Counties. It is recovered from residues from zinc concentrates by Eagle-Picher Industries, Inc., at its plant at Miami, Oklahoma. The main uses for germanium are in the manufacture of semiconductor devices and optical instruments.

Mineral Materials Processed

Mineral materials produced in other states but processed in Illinois in 1974 included bismuth, calcined gypsum, columbium, exfoliated vermiculite, expanded perlite, ground barite, ground mica, iron oxide pigments, natural gas liquids, pig iron, primary slab zinc, rare earths, recovered elemental sulfur, and secondary slab zinc.

Bismuth—A small amount of metallic bismuth was recovered as a secondary product from metal scrap in Illinois by the United Refining and Smelting Company in Franklin Park, Cook County. Bismuth is used as a metallurgical additive; in fusible alloys; and in pharmaceutical-chemical applications.

Calcined Gypsum—Gypsum, which is imported from out-of-state mines, was calcined at Waukegan, Lake County, by the National Gypsum Company. In 1974 the quantity of gypsum calcined was 28 percent lower than in 1973 and the value was 22 percent less. Both quantity and value had established new annual records in 1973.

Columbium—Columbium concentrate from foreign sources and from tin smelter slags was processed by Fansteel, Inc., in North Chicago, Lake County. Columbium is used as a ferro-alloy in the steel industry. Figures are not available.

Exfoliated Vermiculite—Crude vermiculite mined outside the state was processed at West Chicago, Du Page County, by the Construction Products Division of W. R. Grace and Company; at De Kalb, De Kalb County, by Mica Pellets, Inc.; and at Girard, Macoupin County, by the International Vermiculite Company. About 38 percent of the total amount of exfoliated vermiculite processed was used for loose-fill insulation. The 1974 consumption of vermiculite for concrete aggregates and for horticultural uses was 15.3 percent and 16.4 percent of the total, respectively. Block insulation, plaster aggregate, and unspecified uses accounted for the other 30.3 percent of the total. The quantity of exfoliated vermiculite processed in 1974 was 22.7 percent lower than in 1973, and the value decreased by 15.2 percent.

Expanded Perlite—Crude perlite mined outside the state was processed by Silbrico Corp. in Cook County, Mica Pellets in De Kalb County, Filter Products Corp. and National Gypsum Company in Lake County, and Johns-Manville Perlite Corp. in Will County. Expanded perlite is used as an aggregate for concrete and plaster, for horticultural aggregate, in roof insulating board, for low-temperature insulation, as a filter aid, and for miscellaneous purposes. The quantity of expanded perlite produced in 1974 showed an 11.6 percent decrease and the value a 5.7 percent increase from the 1973 levels. Illinois led the nation in production and in producer use and sales of expanded perlite.

Ground Barite—In 1974 ground barite was processed in East St. Louis in St. Clair County by Pfizer, Inc. The 1974 value was 39.3 percent higher than that of 1973. Production decreased 12.3 percent from the 1973 level. Barite is used mainly as a weighting agent in oil and gas well-drilling muds. It is also used in paint, glass, and rubber manufacturing industries, and in the production of barium chemicals.

Ground Mica—Scrap and flake mica was ground and processed in Forest Park, Cook County, by the U.S. Mica Company, Inc. More than 58 percent of the ground mica produced in 1974 was used in cement for wall board joints and in roofing material; the rest was used in the plastics industry, in rubber molded products, as a coating agent on welding rods, for cable and wire insulation, in paint as a pigment extender, in well-drilling muds, and for decorative and miscellaneous uses. A drop of 42.8 percent occurred in the production of ground mica in Illinois from 1973 to 1974. The value of the product also decreased 29.5 percent from the 1973 value.

Iron Oxide Pigments—Iron oxide pigments processed in Illinois in 1974 showed a 39.2 percent decrease in quantity and a 17.4 percent increase in value from 1973 levels. The finished pigments were produced from iron ore imported from other states by the Prince Manufacturing Co. of Quincy in Adams County; G. B. Smith Chemical Works of Maple Park in Kane County; and Pfizer, Inc., of East St. Louis in St. Clair County. Illinois was the leading producer of finished iron oxide pigments in 1974.

Natural Gas Liquids—Natural gas liquids include ethane, propane, isobutane, unsplit butane, and a combination of gasoline and liquefied petroleum gas (LPG). Natural gas was processed in 1974 in Douglas County at the Tuscola plant of the United States Industrial Chemical Co., a Division of National Distillers and Chemical Corp.

Pig Iron and Raw Steel—During 1974, 7.2 million tons of pig iron, valued at \$1 billion, was produced in blast furnaces in Illinois. Production decreased by 9.8 percent, but increased in value by 71.5 percent from the 1973 levels. Four of the five Illinois steel plants are located in Cook County—Interlake Steel Co., International Harvester Company's Wisconsin Steel Division, United States Steel Corp., and Republic Steel Corp. The fifth plant, Granite City Steel Division of National Steel Corp., is in Madison County. According to the American Iron and Steel Institute, 12.9 million tons of raw steel was produced in Illinois in 1974, a decrease of 3.7 percent from the 1973 level of 13.4 million tons.

Primary Slab Zinc—Special high-grade zinc was processed from domestic and foreign ores and concentrates at the electrolytic zinc plant at Sauget in St. Clair County. The plant is operated by AMAX, Inc.

Recovered Elemental Sulfur—During 1974, elemental sulfur was recovered by four companies: The Anlin Co. of Illinois at its chemical plant in Madison County; Union Oil Co. of California at its Chicago refinery in Will County; Marathon Oil Co., at its Robinson refinery in Crawford County; and Mobil Oil Corp. at its new Joliet refinery in Will County. The Anlin Co. of Illinois processed gas streams to recover sulfur from the refineries of Shell Oil Co. and Amoco Oil Co. at Wood River and from the Clark Oil and Refining Corp. refinery at Hartford.

The amount of sulfur recovered in 1974 was 23 percent higher than that recovered in 1973, and the value increased by more than 100 percent. Illinois ranked fifth in the nation in quantity of recovered elemental sulfur and third in value.

Secondary Slab Zinc—During 1974, secondary slab zinc was produced by Apex Smelting Co. at Chicago, Cook County, and by Sandoval Zinc Co. at Sandoval, Marion County.

Mineral Products Manufactured

The mineral products manufactured in Illinois in 1974 from crude mineral materials mined in Illinois and/or elsewhere included cement, clay products, coke, lime, and glass. Available statistical data on production, consumption, and uses are given below.

Cement

Production—In Illinois 1,592,249 tons of finished portland cement and 76,950 tons of prepared masonry cement were manufactured in 1974, a 4.0 percent increase in production of portland cement and a 9.0 percent decrease

in production of masonry cement from 1973. The value of portland cement increased 13.8 percent and that of masonry cement 11.3 percent during that time. Cement was produced by three companies in Illinois—Marquette Cement Manufacturing Co. at Oglesby in La Salle County, Medusa Cement Co. at Dixon in Lee County, and Missouri Portland Cement Co. at Joppa in Massac County.

Finished portland cement shipments totaled 1,460,237 tons and were valued at \$41 million, a 7.1 percent decrease in quantity and a 13.8 percent increase in value from 1973 levels. Prepared masonry cement shipments totaled 69,163 tons and were valued at \$3.2 million, a 21.6 percent decrease in quantity and an 11.3 percent increase in value from 1973 levels (table 29).

The raw materials used in the manufacture of portland cement included limestone, sandstone, shale, clay, sand, slag, fly ash, and gypsum. Of the total 2,692,962 tons of crushed limestone produced in Illinois for use in cement manufacture in 1974, 96.7 percent was consumed within the state and 3.3 percent was exported to other states.

Bulk shipments of cement from Illinois plants to customers were made by truck, rail, and barge. Of the total shipped in bulk, 96 percent was transported by truck. Of the total container shipments, 94 percent went by truck and 6 percent by rail.

Consumption—A total of 3,593,000 tons of portland cement was consumed in Illinois in 1974—556,000 tons less than the amount consumed during 1973 (fig. 12). Plants in Illinois produced only 40.6 percent of the portland cement consumed in Illinois. The other 59.4 percent was imported from other states.

In 1973 Illinois consumption of masonry cement reached a record high for the decade, 129,000 tons, but decreased to 117,000 tons in 1974 (fig. 13). Shipments of masonry cement from Illinois plants accounted for only 59.1 percent of the total Illinois consumption of masonry cement. The amount of masonry imported into the state has been steadily increasing for the past 7 years.

TABLE 29—PRODUCTION AND VALUE OF CEMENT MANUFACTURED IN ILLINOIS,
1973 AND 1974

	Finished portland cement			Prepared masonry cement		
	1974	1973	Change from 1973 to 1974 (%)	1974	1973	Change from 1973 to 1974 (%)
Number of active plants	4	3	+33.33	2	3	-33.33
Production (tons)	1,592,249	1,530,833	+4.01	76,950	84,575	-9.02
Shipment from mills						
Quantity (tons)	1,460,237	1,571,813	-7.10	69,163	88,318	-21.69
Value	\$41,022,966	\$36,064,129	+13.75	\$3,228,203	\$2,900,675	+11.29
Average value per ton	\$28.10	\$22.94	+22.49	\$46.68	\$32.84	+42.14
Stocks at mills, Dec. 31 (tons)	176,094	108,690	+62.01	13,217	5,430	+143.41

Source: U.S. Bureau of Mines.

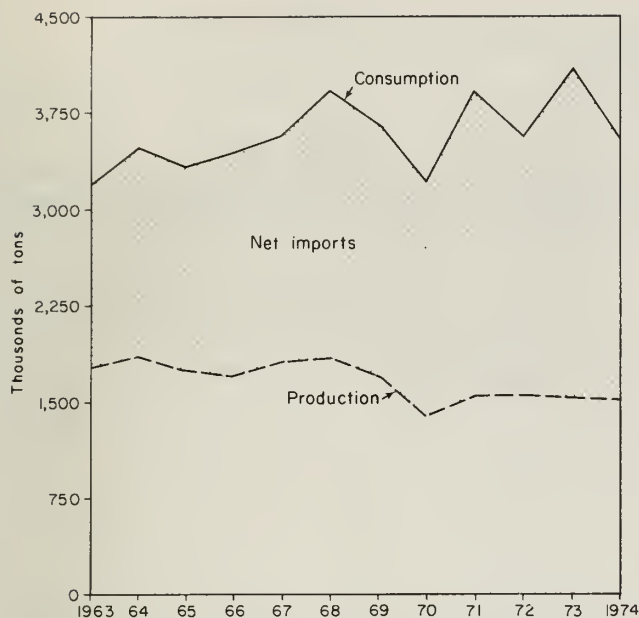


Fig. 12 - Production and consumption of finished portland cement in Illinois, 1963-1974.

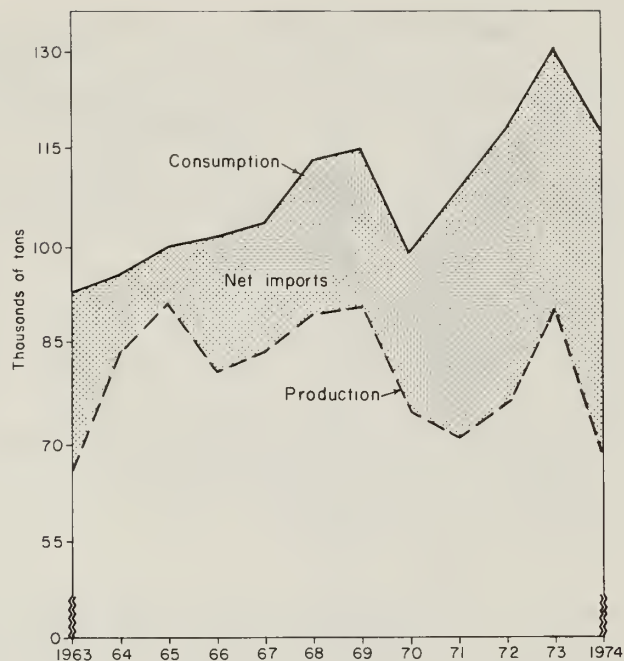


Fig. 13 - Production and consumption of prepared masonry cement in Illinois, 1963-1974.

Coke

Production—In 1974, a total of 1,912,000 tons of coke was produced and 210,000 tons of coke breeze was recovered from four oven-coke operations—three in Cook County and one in Madison County. Production was down 1.5 percent for coke and 5.8 percent for breeze from 1973 (table 30). On the basis of the national average value of \$65.74 per ton, up \$22.82 per ton from 1973, received by producers for all grades of coke, Illinois coke production for 1974 was worth \$125.7 million, 50.9 percent higher than the 1973 value. Of the coke produced in 1974, 94.5 percent was used in blast furnaces by the producing companies, and the remainder was sold. By-products, other than coke breeze, recovered at Illinois oven-coke plants included coke-oven gas, tar, crude light-oil, and ammonia.

The coal used for the manufacture of coke in Illinois in 1974 came from five other states—Kentucky, West Virginia, Pennsylvania, Virginia, and Arkansas—as well as from Illinois. Illinois contributed 35.4 percent and Kentucky 37.5 percent (table 31). The amount of Illinois coal used for coking has declined for the past 6 years. Arkansas sent coking coal to Illinois for the first time in 1972, shipping 105,000 tons. It increased shipments to 150,000 tons in 1973 and 178,000 tons in 1974.

Illinois coal used for coking purposes in 1974 was shipped primarily from mines in Franklin County, Jefferson County, and Saline County, according to the U.S. Bureau of Mines.

TABLE 30—PRODUCTION AND CONSUMPTION, BY USE, OF COKE IN ILLINOIS, 1970-1974

Year	Coke production (1000 tons)	Coke uses (1000 tons)				Total coke consumption* (1000 tons)	Breeze production (1000 tons)	Total breeze consumption (1000 tons)
		Blast furnace	Foundry	Other industrial plants	Residential heating			
1974	1,912	2,867	213	32	†	3,112	212	365
1973	1,941	3,610	204	28	1	3,843	223	241
1972	2,085	2,993	189	16	4	3,201	186	278
1971	2,144	3,298	178	26	3	3,505	189	367
1970	2,356	3,705	183	27	3	3,917	206	461

* Data may not add to totals shown because of independent rounding.

† Included with "Other industrial plants."

Source: U.S. Bureau of Mines.

Consumption and Uses—Illinois consumed 3,112,000 tons of coke and 365,000 tons of coke breeze in 1974 (table 30), a 19 percent decrease in coke and a 51.5 percent decline in breeze from the 1973 consumption levels. The increase in consumption of coke during 1973 basically reflects the increase in pig iron production. Coke is also used for foundry and other industrial purposes, and a very small amount is used for residential heating. Coke breeze was used for fuel in steam plants, in agglomerating plants, and for other uses.

Lime

Production—In 1974, Illinois ranked seventh in the nation in lime production. Hydrated lime and quicklime were produced by two companies: Marblehead Lime Co. has four plants, two in Adams County and two in Cook County, and Vulcan Materials Co. has one plant in Cook County. The total amount produced in 1974 was 6.5 percent below the 1973 level (fig. 14). The lime was shipped to consumers in Illinois, adjoining states, and Canada.

Consumption and Uses—A total of 1,165,000 tons of lime was consumed in Illinois, 3.1 percent less than in 1973 (fig. 14). The lime was used in steel furnaces, in refractories, for water purification, for sewage treatment, and for other purposes. Even though it is a major lime producer, Illinois continued to be a net importing state.

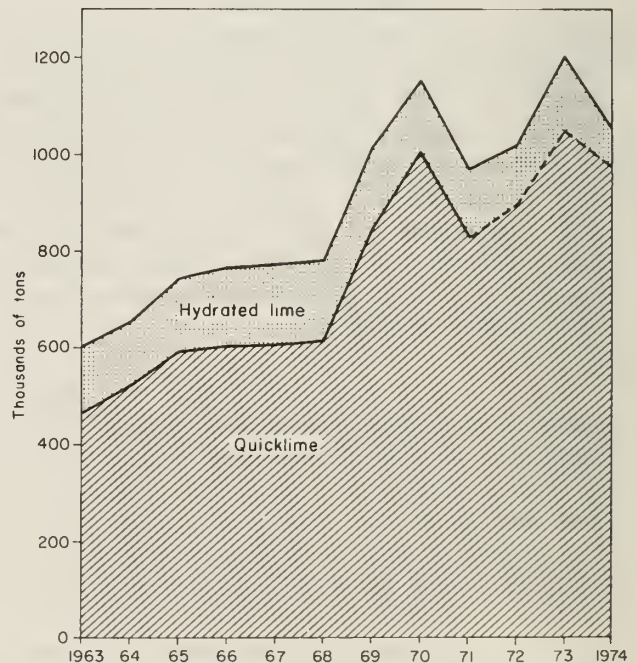


Fig. 14 - Trends in consumption of quicklime and hydrated lime in Illinois, 1963-1974. Source: U.S. Bureau of Mines.

TABLE 31—QUANTITY AND VALUE OF COKE AND BY-PRODUCTS PRODUCED, SOLD,
OR USED BY PRODUCER IN ILLINOIS, 1973 AND 1974

Coke and by-products	Unit	1974			1973		
		Quantity	Value at plant		Quantity	Value at plant	
			Total (\$1000)	Average (\$ per ton)		Total (\$1000)	Average (\$ per ton)
Plants in operation		4			4		
Coal, carbonized	thousand tons	3,013	98,910	32.83	3,108	50,177	16.14
Coal per ton of coke	tons	1.58	—	51.87	1.60	—	25.82
Coke produced	thousand tons	1,912	125,694	65.74	1,941	83,308	42.92
Coke yield, percent of coal carbonized	percent	63.46	—	—	62.45	—	—
Source of coal carbonized							
Illinois	thousand tons	1,060	—	—	1,150	—	—
Kentucky	thousand tons	1,122	—	—	1,084	—	—
West Virginia	thousand tons	558	—	—	552	—	—
Pennsylvania	thousand tons	24	—	—	53	—	—
Virginia	thousand tons	51	—	—	42	—	—
Arkansas	thousand tons	178	—	—	150	—	—
Total	thousand tons	2,992	—	—	3,071	—	—
From stock	thousand tons	21	—	—	37	—	—
Coke sold or used by producer							
Blast furnace	thousand tons	1,807	116,740	—	1,974	73,131	—
Other purposes	thousand tons	W	W	—	W	W	—
Commercial sales							
Blast furnaces	thousand tons	W	W	—	W	W	—
Other industrial plants	thousand tons	—	—	—	—	—	—
Residential	thousand tons	—	—	—	—	—	—
Coke oven by-products							
Ammonia produced (sulfate equivalent)	thousand tons	23	—	—	23	—	—
Per ton of coal coked	lb	15.27	—	—	14.80	—	—
Sulfate equivalent sold	thousand tons	24	1,310	—	25	524	—
Coke oven gas produced	million cu ft	30,245	—	—	31,841	—	—
Per ton of coal	thousand cu ft	10.04	—	—	20.24	—	—
Used in heating coke ovens	million cu ft	13,409	—	—	12,888	—	—
Surplus used or sold	million cu ft	15,711	5,498	0.35/Mcf	17,755	4,407	0.248/Mcf
Wasted	million cu ft	1,125	—	—	1,148	—	—
Light oil and derivatives sold	thousand gal	7,048	—	—	W	W	W
Tar produced	thousand gal	19,728	—	—	21,488	—	—
Per ton of coal coked	gal	6.55	—	—	6.91	—	—
Used by producers	thousand gal	W	—	—	W	—	—
Sold for refining	thousand gal	16,067	4,192	0.261/gal	17,331	1,923	0.111/gal
Total coke and by-products sold or used (excluding light oil and derivatives sold)			136,694			90,162	

* Estimated from blast furnace price.

W - Withheld to avoid disclosure of data from individual companies.

Source: U.S. Bureau of Mines.

Clay Products

To obtain accurate, current information about the amount and value of clay products manufactured in Illinois, the Illinois State Geological Survey each year sends questionnaires to all producers in the state. Twenty-six companies responded to the canvass for 1974. Thirteen companies reported clay mining operations.

Clay products valued at \$56.9 million were produced in Illinois in 1974. Included in this value are whiteware and pottery (\$31.9 million), structural clay products (brick, drain tile, and sewer pipe) (\$13.0 million), refractories (\$7.5 million), and lightweight aggregate and other products.

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